



SUMMARY ANNUAL REPORT 2001

**BY R.S.B. FERRIS, J. JAGWE, A. MUGANGA, G. OKOBOI, K. WANDA, M.
NAMANYA, E. MATOVU**

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This is a summary of the activities that have been conducted within the FOODNET project.

1. Theme 1

Priority constraints to systems productivity as well as opportunities and farmers' strategies to improve rural livelihoods determined at field, farm, and landscape levels

1.1 Development of convenience foods from fermented sorghum flour in Sudan

By M. Mohamed-Mustafa¹ and R.S.B. Ferris²

Food Research Corporation, Sudan¹, IITA-Foodnet (FOODNET grant 14)

Sorghum grain is a major the staple food of Sudan, which is consumed in various forms including Kisra (thin bread), Aceda (porridge) ,Abre, Nasha as well as other alcoholic beverages. Kisra is prepared traditionally by a lengthy fermentation process which takes more than 12 hours . This project aims to shorten the fermentation time towards industrialization of Kisra processing. A combination of starter culture and sorghum malt was found to reduce the fermentation time significantly ($P < 0.05$). Rapid consumer surveys indicate that Kisra consumption has dropped markedly especially in urban areas due to high cost, poor quality and competition with conventional bread. This project is an attempt to revitalise the Kisra market and thereby provide greater demand for sorghum. As part of this study, random samples of traditionally fermented sorghum dough were collected from different households in Khartoum State for microbiological analysis, for the purpose of selection of the appropriate species of lactic acid bacteria involved in fermentation process of sorghum batter. All the strains of lactobacillus were isolated purified and kept in MRS Agar. Sub culturing was carried out at monthly intervals. The organisms were tested for their ability to ferment fresh sorghum flour. They proved to have good performance with regard to acid production, pH ...etc. However, for sustainability of these characteristics, the isolates need to be maintained at the stock as freeze-dried cultures to overcome the risk of mutation within isolated bacteria. To overcome this aspect, a freeze drier has been purchased, this will be the first such facility in Sudan.

1.2 Developing improved pigeon pea processing and utilisation in Sudan

By P. Bureng¹, H. Hassan¹, A Albadawi Zakeria¹ and R.S.B. Ferris²

Food Research Corporation, Sudan¹ , IITA-Foodnet (FOODNET grant 15)

Traditionally, Pigeonpea is dehulled by hand, thereafter it is pounding in wooden mortars before being ground using two stones. The products of these processes are either partially dehulled splits or powders that are used for preparing traditional dishes. At FRC, processing technologies have been developed to improve these traditional processes which are laborious, lengthy and often produce poor quality products. The new process involves washing, conditioning, drying, dehulling, splitting and packaging. The equipment is simple ranging from manual to mechanical. The machinery capacities range from small - scale (1-5 Kg) for household level , pilot - scale (10- 50 Kg /hr) , and commercial - scale (greater than 50 Kg/hr) . To accelerate the process of wider adoption a contract has been signed on 17.05.2001 by Technology Workshop, Khartoum North, Industrial Area, to fabricate five processing units for the project. These units are for cleaning, grading and dehulling of the pigeon peas. Marketing and consumption surveys are also underway.

1.3 Marketing of cassava products in Rwanda for improved food security

By S. Kantengwa*, C. Gasengayire+, P Bimenyimana#, I. Twagirayezu**and R.S.B. Ferris IITA-Rwanda*, Urunana Farmers Association+, World Vision-Rwanda #, Kanzenze Farmers Association** (FOODNET Grant 4)

World Vision technicians in Umutara province have conducted preparatory meetings with farmers to elaborate an implementation plan for the project. In Bugesera region, a two year drought has caused widespread food insecurity, which has delayed the start of this project, however, the selected group has planted 2.5 ha of cassava in order to produce enough cuttings for further production as well as having sufficient raw material to start processing in 2002. Farmers have been trained in cassava processing and donkey handling, all equipment and donkeys are now in place. The group has identified the processing centre and have delegated people responsible for all planned activities. In Umutara, the Urunana farmers association have been trained in cassava processing and animal traction in field transportation. A major campaign has also been launched to plant cassava, so that they will have sufficient materials for processing next year. The next phase of the work will be to develop capacity within the farmer organisations for market linkage, through a rapid market survey and to build capacity in the group to develop the processing ideas into a sustainable business framework.

1.4 Establishment of a small scale integrated cassava processing enterprise in Uganda

By A. Agona*, Patrick Kalunda*, Jane Nabawanuka*, Cedric Mutyaba*, R.S.B. Ferris (FOODNET grant 5)

*Kawanda Agricultural Research Institute (KARI), National Post Harvest Program, Uganda

The aim of this project is to train people in rural communities to use improved cassava processing equipment and thereby use these new techniques to link resource poor people to growth markets in a profitable and sustainable way. Developing more sustainable livelihoods being achieved through diversification of labour, products and gaining access to higher incomes. The first stage of this work was to conduct a needs and constraints assessment of cassava marketing in Lira district using rapid reconnaissance methods, which involved secondary data collection and organization, and informal interviews with key informants who included district political leaders, contact farmers and traders. The results from this study were (i) A socio-economic profile of the study area, (ii) information on the importance of cassava in the study area, (iii) a list of the food markets in Lira both spatially and temporally, (iv) a better understanding of the constraints faced during production, utilization and marketing of cassava in Lira, and identification of key researchable areas in the cassava food system matrix. As part of this process a semi-structured questionnaire was designed for cassava producers, processors and traders. A formal survey of 120 cassava farmers, and 80 cassava traders in Lira district has been completed and data analysis has been initiated. Market chain analysis included interviews with participants in the neighbouring district of Nakasongola and the final destination of Kampala. Issues being investigated include processing, utilization and marketing of cassava at the various market levels. Output of the survey will include quantification and qualification of constraints, and needs in the cassava food system matrix with a view to improving the efficiency of cassava marketing.

1.5 Developing business support tools for agro-enterprise development

1.5.1 Developing and Identifying Best practices methods for Assessing Market Opportunities for Small Rural Producers

By R.S.B. Ferris¹, R. Best² and C. Collinson³

1 – IITA, 2 – CIAT, 3- NRI

The basic elements of the commercialization strategy are three steps, (i) market surveys to determine demand and supply opportunities, (ii) technology development or adaptation of technologies where required (iii) pilot plant support, (iv) strengthening of local business support services. In order to engage partners in this process, a series of best practice methodologies and background support documentation is being developed and compiled to assist partners in the processes of (i) market analysis, (ii) enterprise development and (iii) business support services. The clients for these manuals include NARS, NGOs, Farmer Associations and Government Agricultural Ministries. The current list of documents include:-

1. Identifying and Assessing Market Opportunities for Small Rural Producers,

Translated into English to support the FOODNET market analysis courses by C. Ostertag and R. Best

2. Rapid Methods for Market demand evaluation. Case Study - Uganda Industrial Survey Part II of Ugandan Cassava marketing Survey

By A. Graffham*, U. Kleih*, J. Jagwe#, K. Wanda#, P. Kalunda+ J. Nabawanuka+, G.

Ntibarikure# and R.S.B. Ferris# (FOODNET commissioned study grant 2)

Natural Resources Institute, UK*, International Institute of Tropical Agriculture (FOODNET)#, National Postharvest Programme, Uganda+

3. Rapid methods for Market Supply Chain Analysis. Case study - Cassava Marketing in Uganda: Constraints and Opportunities for Growth and Development

by C. Collinson*, K. Wanda, A. Muganga, and R.S.B. Ferris

*Natural Resources Institute

4. Prices, Products and People, Analysing Agricultural Markets in Developing Countries. (1995). Edited by G. J. Scott. ISBN 1-55587-609-9. pp493.

5. The design of a marketing system in Uganda for small-scale farmers and processors.

Robbins, P., and Ferris, R.S.B. (2000). CTA publication Contract No. 4-1-06-215-9 www.cta.nl

6. Stakeholders Meetings for Strengthening the Market Information Service in Uganda.

Ferris, R.S.B and Robbins P. (2000). pp75. Foodnet website. www.cgiar.org/foodnet

7. A guide to Marketing Costs and how to calculate them. 1993 A. W. Shepherd. FAO, Marketing and Rural Finance Service. AGSI, Viale delle Terme di Caracelle, 00100, Rome, Italy. Pp 59

8. A guide to maize marketing for extension officers. 1999 A. W. Shepherd. FAO, Marketing and Rural Finance Service. AGSI, Viale delle Terme di Caracelle, 00100, Rome, Italy. Pp 111

9. Understanding and using market information. 2000. A. W. Shepherd. FAO, Marketing and Rural Finance Service. AGSI, Viale delle Terme di Caracelle, 00100, Rome, Italy. Pp 85.

1.6 Cassava market Survey Madagascar

By Marie-Hélène Dabat¹, R. Ranavoison², J. Whyte³ and S. Ferris³

1- CIRAD / CA / Calim, 2- FOFIFA, 3- IITA

Il existe potentiellement une grande diversité de produits dérivés du manioc (produit séché, amidon, fécule, sirop de glucose...), qui peuvent être utilisés par une gamme étendue d'industries : agro-alimentaire, papier, textile, contreplaqué, édulcorant, confiserie, assaisonnement, pharmacie, colle... A part la fabrication de fécule et de tapioca, les autres usages sont marginaux, voire inexistants, à Madagascar. La fécule de manioc est commercialisée dans les magasins et grandes surfaces auprès des ménages, elle sert aussi de liant aux charcuteries et rentre dans la composition de certaines colles. Les besoins ne sont pourtant pas totalement satisfaits par la production nationale (actuellement environ 300 t par an), reposant désormais sur une seule entreprise industrielle au matériel vétuste et dont la rentabilité dépend d'une activité annexe et quelques entreprises artisanales qui fonctionnent très irrégulièrement et atteignent difficilement les standards de qualité requis par le marché. Ainsi Madagascar importe de petites quantités d'amidons de maïs (environ 40 t par an), de pomme de terre (20 t en 2000) et même de manioc (environ 15 t en moyenne par an dans les années 90) que le pays pourrait produire. Certains secteurs qui utilisaient de l'amidon de manioc dans le passé, comme l'industrie textile ou de la colle, se sont tournés vers des produits synthétiques et importent les matières qu'ils utilisent désormais. Pourtant le potentiel de développer les produits dérivés du manioc est grand. Les farines, amidons et produits séchés de manioc entrent ou pourraient entrer dans la composition de produits dont la consommation augmente à Madagascar comme ceux issus de la charcuterie, la boulangerie, la biscuiterie, la confiserie, la fabrication d'emballages, les colles, les enduits, la nourriture animale... En ce qui concerne la fécule, le problème est moins la qualité du produit offert qu'un manque de régularité dans les approvisionnements. Une meilleure organisation de la filière fécule/amidon et l'incitation à la création d'unités supplémentaires pourrait pallier ces inconvénients. Les attendus par rapport à la recherche se situent aussi au niveau de produits plus sophistiqués que la fécule et directement en concurrence avec les produits étrangers tels que les amidons utilisés pour la fabrication des emballages, textile et produits pharmaceutiques, pour lesquels le pays pourrait disposer d'un avantage prix. Concernant le sirop de glucose, le produit malgache est expérimental seulement et ne correspond pas à l'exigence de stabilité du taux de dextrose et aux caractéristiques d'odeur et de couleur requises par certains utilisateurs industriels. La pratique est d'importer un tel produit (140 t en 1994, 700 t en 1999 et presque 1.000 t en 2000). Il serait souhaitable que la recherche contribue à l'élaboration d'un produit aux normes requises qui ne sont pas les mêmes selon les secteurs utilisateurs. La question de l'utilisation des farines de manioc rencontre elle la réticence des consommateurs peu enclins à acheter des produits alimentaires qui comportent du manioc. Cette contrainte pourrait être atténuée en visant la clientèle des populations non encore conformées aux standards alimentaires occidentaux et dont le faible revenu pourrait constituer un point d'accroche à une diffusion plus large de tels produits (populations rurales). Il est paradoxal de noter qu'il est plus difficile de faire accepter sur un plan commercial du pain contenant 10% de farine de manioc qu'un produit de charcuterie contenant 10% de fécule de manioc. Il est certain que pour toutes ces questions un rapprochement des milieux de la recherche et de la production est fondamental pour favoriser une amélioration des connaissances sur les besoins des fabricants et de l'organisation des sous-filières du manioc pour satisfaire les demandes actuelles et les besoins futurs au détriment des produits d'importation. Cependant comme les exemples du Vietnam et de l'Equateur le montrent, le développement de filières de produits transformés à partir de manioc ne se fait pas sans une prise de conscience de l'intérêt de telles opérations par les acteurs politiques et un appui significatif à l'organisation des opérateurs économiques.

1.7 Market demand study for value added cassava products in Kenya

E. Karuri¹, S. Mbugua¹, J. Karugia¹, J. Jagwe² and R.S.B.Ferris² (FOODNET grant 3)

1- University of Nairobi, 2- IITA-Foodnet

Despite considerable efforts from agricultural research to increase productivity, through improved farm based technologies, rural household incomes have largely remained low, thereby perpetuating poverty levels and its negative consequences, such as low savings, low investment, low productivity and low incomes. It is becoming increasingly clear that real benefits to rural communities are going to come from forward linkages of rural producers to more stable and higher value industrial markets. Therefore, this report presents findings on the current state of the Kenyan market for starch, starch-based adhesives and high quality cassava flour for industrial purposes. According to our findings, the total market for starch-based products in Kenya is approximately 12,000 MT per annum. About 60% of this amount goes into the brewing industry. Other major consumers include paperboard, paper and the food sector. Native maize starch dominates the market and there is little use of modified starches. Most of the starch being used is maize based although cassava starch has potential to substitute maize starch in the paperboard industry. Some industries have used cassava starch in the past and indicated that they found cassava starch to have several advantageous qualities. However, use was discontinued due to inconsistency in quality and erratic supplies. According to the producers, local manufacturing costs are high because of inefficiencies in the production chain and this is an interesting fact given that most previous agricultural research and development has placed such emphasis on production based technologies. At the moment production and supply of cassava starch is negligible. There is only one cassava starch producing factory in Mombasa and this is due to close in 2001. Failure in local cost effective production of starch was attributed to lack of low cost cassava and poor infrastructure. The potential use of cassava in animal feeds has not been exploited in Kenya. This is mainly due to lack of information especially in terms of the processing steps and the rate of substitution of cassava for maize in the commercial animal feeds. Similarly, imported maize starch is used in the production of paper and for adhesive production. In conclusion, cassava could be a very useful source of starch in Kenya, to supply both the paper and brewing industries. However, new technologies are required, coupled with efficient production and management systems.

1.8 Market study to determine the options within the ware and seed potato markets in Rwanda

By G. Okoboi¹, F. Goossens², A. Cooke³, K. Wanda¹, J. Jagwe¹, S. Nzito⁴, C. Mukaruziga⁴, J. Mugabo-Rusisiro⁴, M. Namanya¹, and R.S.B. Ferris¹,. (FOODNET grant 8)

1 – IITA-Foodnet, 2- Independent consultant, 3 – Abt Associates MINAGRI, 4 - ISAR

In the pre-genocide era, Rwandan agriculture had a clear comparative advantage for the production and supply of clean seed for Irish potato and sales of ware potatoes into Uganda. The country also had prospects for developing further regional markets for potato. Demand for potatoes and potato products has been increasing in the region over the past 10 years as a result of changes in diet and higher income groups in the regional urban centres. The high altitudes in Rwanda make it possible to produce planting materials, which are less prone to infection with potato blight, and therefore, the highland areas of Rwanda provide an ideal production zone and source of clean planting materials. Unfortunately, much of this capacity was lost as a result of the genocide and in the protracted period of insecurity in the highland areas from 1994 – 1998. During this period, much of the germplasm was lost and trade links degenerated. This study aims to identify the current market opportunities for Rwanda potato production for national and regional supply of both ware and seed potato. The project was conducted in two main parts, a

survey within Rwanda to analyse the constraints in the current marketing system and develop new strategies that will support the revitalisation of the potato sector and a series of studies in the countries neighbouring Rwanda, to assess the current potato markets in these countries with the aim to identify the potential for Rwanda to supply these markets. The rationale for this project is based on a prior analysis by Abt Associates, which indicates that Rwanda has high comparative advantage in the potato sector and that high rates of economic growth can be achieved if the potato sector is rationalised, with an initial investment from the Government and donor communities for inputs, namely varieties and fertiliser, improved farmer organisations and storage facilities and the redevelopment of trade linkages.

1.8.1 Potato production and marketing prospects in Rwanda

From 1985 to 2000 Rwanda increased per capita consumption of potatoes by 90%, whereas population grew by 38%. These trends are likely to should continue as Rwanda urbanises and the population increases. Up until now, Rwanda has increased production through increasing area under production but due to limited arable land this strategy is unlikely to continue. Although farmers may transfer some land under other crops to potatoes, most of the extra production will need to come from increasing yields, if Rwanda is to avoid importing significant tonnages of potato. To initiate this process of Rwanda will be required to undertake a major upgrading strategy for this sector including the importation and multiplication of clean new seed and develop an input supply market for particularly fertilizer and pesticides. In the current market structure, producers consume up to 80% of potatoes produced and the remainder are marketed, mostly within the country. At present most of the varieties produced and marketed in Rwanda are not competitive regionally because farmers are not growing the varieties that are in demand in neighbouring countries. The current varieties such as Cruza and Sangema are considered to have too high a water content and these varieties are also susceptible to bacterial wilt, both of which lead to high losses in storage and transport. However, Rwanda does export some potatoes to Burundi because Burundi has even greater problems of this kind. Traders do not practice market segmentation, they treat potatoes like a fresh vegetable which they buy and sell as quickly as possible as an undifferentiated perishable commodity. Although prices vary seasonally, within most markets, local traders collude to offer the same price to consumers. Rwandan farmers currently need 2,000 tonnes of basic seed per year; the current seed-potato production system produces only 600 tonnes. The National Seed Service needs to limit its tasks to facilitation and certification of seed, while the private sector should take over a greater role.

1.8.2 Potato production and marketing in Tanzania and the market opportunities for Rwanda

Although Irish potato ranks 8th in the list of principal food crops of Tanzania, Table1, demand is strong and production has increased fourfold between 1995 and 1999. Production and yield trends illustrate that yield gains have come from increased acreage, rather than increased yield per unit area, Figure 2.

Crop	Planted area (Ha)
Maize	3,010,631
Cassava	848,126
Rice	503,533
Sweet Potatoes	266,884
Millet	256,800
Sorghum	207,671
Wheat	35,812
Irish Potatoes	28,421
Total	5,157,878

Data source: National Bureau of Statistics,
Dar es Salaam, Tanzania

Figure 2: Potato production and yield in Tanzania, 1961 - 2000

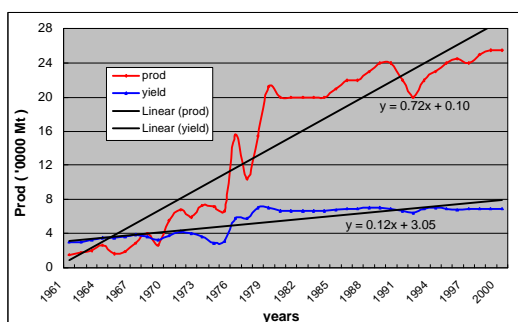
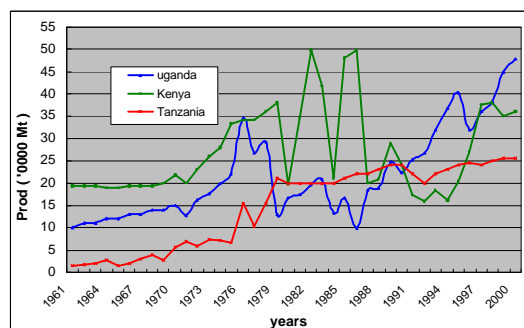


Figure 3. Trend of potato production in Uganda, Kenya and Tanzania: 1961-2000



Data source: FAO country statistics

Findings from the rapid market survey in Tanzania, found that although potatoes are not a major food security crop for rural dwellers, demand is rapidly increasing in the urban markets. Interviews with traders and processors, found that potato markets in both Mwanza and Dar es Salaam are growing rapidly, with most demand for potato consumption as chips, which are sold in hotels, restaurants and more recently as street food. To meet the increasing urban demand, production is shifting in the country from the southern areas to the central plains, but the northern areas of Tanzania do not have favourable agro-ecological conditions for potato cultivation. Production data shows that Tanzania produces less potatoes than its East African neighbours, Uganda and Kenya although growth has been less erratic, Figure 3. Mwanza, the major commercial city in north-western Tanzania, imports most of its potatoes from Kenya, however, poor road conditions hampers trade. At present traders in Mwanza are not sourcing potato supplies from Rwanda, due to lack of security along the main road to Rwanda, high transport costs, and low potato quality. Other market centres such as Dar es Salaam obtain most potatoes from southern Tanzania. There is a train link from Mwanza to Dar es Salaam and this offers some prospects for increased supply from the north, but this would be highly dependent on quality and price. Comparative analysis of Rwanda's potential role in the Tanzanian market indicates that at present it may not be competitive, due to the quality of the potatoes.

1.8.3 Potato production and marketing in Kenya and the marketing potential for Rwanda

The main Kenyan potato growing districts include: Meru, Kiambu, Nakuru, Kiisi, Nyandarua, Transi-Nzoia, Laikipia and Uasin Gishu. Over 70% of potato output comes from the highland areas above 2,000m and in areas above 2,100m research stations and NGOs have encouraged

growing of potatoes for seed. FAO statistics indicate highly erratic production figures, which reflects problems associated with adverse weather conditions. The dramatic fall in production in the mid 1980s was the affect of a severe drought.

Figure 1: Trend of production ('000 Mt), 1961-2000

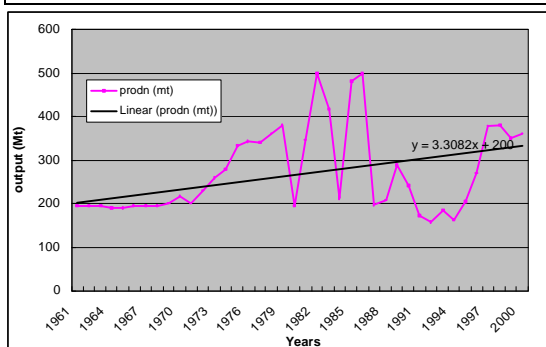
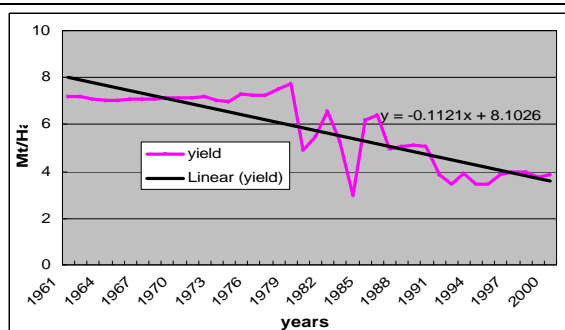


Figure 2: Trend of Potato Yields in Kenya: 1961-2000



Despite the increased area under potato cultivation, yields in Kenya have deteriorated since 1980 due to persistent droughts and potato yields in Kenya have been falling at rate of 11% per year. Apart from the adverse weather conditions that have affected yields, poor yields also reflect low soil fertility and lack of access to fertilizers and clean potato seed. Farmers, near Tigoni National Potato Research Centre (NPRC) indicated that the varieties Nyayo and Asante were currently the most popular high-yielding varieties grown by farmers in their province. According to J.N. Kabira, director of NPRC-Tigoni, these varieties are high yielding, early-maturing, tolerant to late blight (LB) and are highly suited to making chips. Kerr's Pink and Dutch Ruby varieties are most favoured for making crisps: farmers of these varieties receive a premium price from processors for the rapidly growing crisp market.

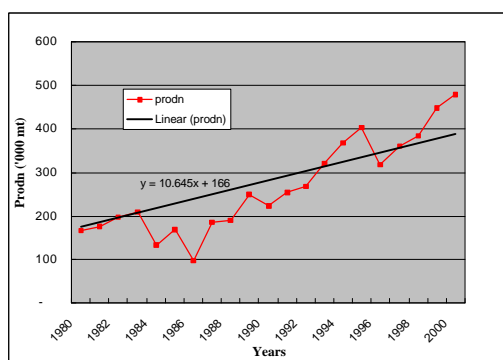
Although women dominate potato cultivation in Kenya, the marketing is dominated by men. The principle players in the Kenya potato trade are the travelling traders who move supplies from the production areas to the main markets in Nairobi. The potato market in Nairobi is highly competitive and prices are determined by demand and supply, and by quality difference. Whereas in the production areas, poor farmer organisation means that travelling traders are able to fix low prices. Chips and crisps are the principal potato products that are increasingly consumed in Kenya's urban areas. Value addition is emerging with a number of small-scale industries processing potatoes into snacks. In terms of regional trade, Nairobi imports potatoes from northern Tanzania to supplement local production, there is currently no trade with Rwanda and this is an unlikely possibility due to the distance from Rwanda to Nairobi. Kenya exports potatoes to northwest Tanzania and could be increased if roads were improved.

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1.8.4 The marketing potential of Potatoes in Uganda and market opportunities for Rwanda.

This report is the result of a rapid national potato market survey designed to analyse the marketing potential of the potato sub-sector in Uganda, with emphasis on the export market potential from Rwanda. The survey involved formal and informal interviews to a cross-section of participants in the potato sector. Production figures indicated that output of potatoes in Uganda is steadily rising but that rates of increase are flat. This suggests that more technical and farming systems investments are required to raise both production efficiency and levels of output.

Figure 3: Potato production ('000 Mt) in Uganda, 1980-2000



Potato yields in Uganda are poor due to very low rates of inputs (clean seed, fertilizers, and chemicals) utilisation. In Kabale 1% of farmers are reported to use fertilisers (Low, 2000). While Potatoes are a major food staple and cash crop in the highland areas where they are cultivated, they are considered a cash crop in the lowland areas, where they have been promoted more recently.

The high level of perishability and lack of appropriate long-term storage facilities has significantly influenced the degree of price uncertainty in the Potato market. Analysis, showed that brokers are a key link in the potato marketing chain and this group appears to charge excessive fees for their services. Within the supply chain, travelling traders attain the highest net margins and collude with brokers to reduce prices for rural producers.

There is no significant cross border trade in ware potatoes between Uganda and the neighbouring countries. However, limited formal and informal trade takes place along the Uganda-Rwanda border during the months of September to November when there is a supply shortage in Uganda.

Table 2a: Potato Production Calendar for Kabale District.

Area of cultivation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Hill slopes	Potato Harvesting	Potato planting			Potato harvesting			Potato planting			Potato Harvesting	
Swamp land					Potato planting			Harvesting				
Valley bottom	Potato Planting		Potato harvesting									Potato Planting
Mean monthly Rainfall 1990-2000 (mm)	72.3	73.1	136.5	114.9	98.4	43.0	13.7	56.4	88.8	131.4	98.4	90.0

The potato production Calendar shows the windows of opportunity for Rwandan trade and from this survey it appears that September to November is the most likely time for Rwanda potatoes to sell profitably in Uganda. It should be noted however, that traders in the main markets of Kampala, Uganda, have recently tested Rwandan potatoes and found the quality was poor. Rwandans are not producing the varieties of potatoes the market requires and size of the tubers was also too small. Rwanda needs to address these market barriers first, if it is to have any potential for impacting on the Ugandan market.

It was found that seed potato production and marketing in Uganda was poorly developed and the market is currently monopolised by 25 members of Uganda National Seed potato producers' Association. This association is selling 100kg bags of seed potato at 5 times the price of ware potatoes. Much of these prices are being fuelled by NGOs, who are buying most of the output from the association, to be distributed at no cost to farmers. For both the farmers and the association, this approach appears to be somewhat unsustainable.

In terms of market demand, potato chips are by far the most popular potato product in urban markets as made evident by the increasing number of fast food outlets. The potential of potato crisps is encouraging but there are no processing factories in Kampala to develop this industry and all crisps on the market at present are of low quality or imported.

1.9 Implementing a marketing survey for potatoes in Njabini Kenya

By N. Nganga*, Kinangop Flower growers, R.S.B. Ferris, (FOODNET grant 9)
KARI*

This project aims to analyse the market chain for potatoes in Njabini zone, Kenya and find ways of improving or developing alternative market channels for potatoes. The project will provide systematic information on the flow and prices of potatoes along the market chain, from the farmers in Njabini to the consumer. The analysis will attempt to determine whether farmers can benefit from seasonal price fluctuations and also to determine whether simple strategies can be developed such that farmers can capture a higher share of the terminal market price.

Routine price / quantity data collection for farmers in Njabini and Retailers and Wholesalers in Nairobi has been done on a weekly basis, to gather information on prices along the marketing chain, Table 1, shows the average price received by the different market players that were active in each week and the differences in price, not taking into account costs.

Table 1: Average weekly prices received by the different market players over the reporting Period, April 12th (week 15) to July (Week 27)

	Farmers Ksh /kg	Differences	Wholesalers Ksh /kg	Differences	Retailers Ksh /kg
18	2.83	3.09	5.92	2.91	8.83
19	2.91	2.76	5.67	3.36	9.03
20	2.93	3.26	6.19	2.83	9.02
21	3.17	3.06	6.23	2.9	9.13
22	3.07	3.42	6.49	2.88	9.37
23	3.56	2.87	6.43	2.93	9.36
24	4.07	2.52	6.59	3.26	9.85
25	4.57	2.07	6.64	3.28	9.92
26	4.32	2.13	6.45	4.47	10.92
27	4.39	2.06	6.45	4.37	10.82

According to interviews with farmers, regular tracking of prices allowed the farmers to understand that they were obtaining improved prices with time and by week 25, most farmers suggested they were getting g Ksh 50-100 or more per bag on the transactions. The differences in prices, also showed the risks and incomes borne by the other players in the market chain. Some farmers were also under the impression that brokers were packing more fairly, i.e., they packed smaller bags comprising of 7 instead of 8 buckets / debes per bag. When prices fell in week 26, farmers were aware that this was the result of increased supply from another area in Nyandarua District called Ol Jorok. Understanding the reasons for changes in market prices and being able to discuss these factors is an important start in being able to make better decisions on when to sell and store products.

The survey also revealed that potatoes from the farmers group supplied two main markets, Nairobi and Agha Khan. In the Nairobi wholesaler market brokers determine how much to pay farmers and they facilitate packing. Brokers deliver packed potatoes to the buyer at an agreed location and price, most brokers are men. At the Agha Khan Market, women dominate proceedings. Women paid Ksh 100 more per bag than the brokers' but they did not accept damaged or small tubers unlike, brokers who do not grade.

Prices obtained from other markers showed a wide spread in prices that farmers received, which was based on bargaining ability and product quality and amount. Due to lack of market information, many farmers sell at prices offered and do not know average daily sales prices. In the next 3 months, the project will continue routine price / quantity data collection and this information will be linked to weights of bags being sold by farmers. More efforts will be placed on assessing the different markets in this area and particularly to investigate if the farmers can link to non fresh markets, such as the fried chips markets which offer higher and more stable prices.

1.10 Assessment of potato marketing systems in the central highlands of Ethiopia

By C. Yirga¹, A. Tesfaye¹, G. Medhin¹, W. Giorgis¹, E. Gebre¹ and R.S.B. Ferris (FOODNET grant 11)

Ethiopian Agricultural Research Organisation

A participatory rural appraisal (PRA) was conducted by a multidisciplinary team in major potato producing areas of the central highlands of Ethiopia. The PRA included secondary data collection, discussions with individual groups of farmers, key informants and direct observation of the critical stages of production and marketing. The purpose of the informal survey was to gain a preliminary understanding of potato production and marketing practices in the study area..

The survey found that the major potato production constraints raised by farmers include:

- Unavailability of improved varieties, particularly, Genet
- High fertilizer and fungicide costs
- Late blight, most varieties are highly susceptible to late blight.
- Bacterial Wilt: This problem has become important in recent years.
- Unavailability, poor quality and high prices of fungicides for controlling late blight.
- Traders collude and fix prices of fungicides
- Low Fertility of the soil
- Climatic Variability

Marketing Practices

Among the potential potato producing areas in the country, the highlands of Shashamane Wereda and its vicinity, supply much of the ware potato to Addis Ababa and other regional markets in eastern and southern Ethiopia. Almost all potatoes produced in Shashamane are collected from producers and distributed to consumers by private traders. Farmers in the study area follow three marketing strategies to move their produce from production areas to the consumption points.

- Selling the produce at farm gate
- Selling the produce in the local market
- Selling the produce in the nearby towns such as Meke, Nazareth and Mojo

Most farmers choose the first strategy as this approach has a number of advantages, middlemen are aware of the production activities and approach farmers when potato fields are ready for harvest. Brokers inspect the field and take samples of the tubers to traders in the Shashamane markets. After agreement on price and package to be used, the middleman takes the responsibility of overseeing the harvest and bagging of the produce. This system decreases risk of quality deterioration, as potatoes are highly perishable and reduces marketing costs for the farmer. For the trader there are also advantages as traders do not pay taxes when they buy directly from farmers and there is a rapid transfer of product to market which reduces the risk of quality deterioration which would otherwise increase costs due to spoilage. The second strategy is adopted when produce volumes are too small to attract traders or when faced with immediate cash needs and in this case farmers sell their produce directly to consumers, brokers or collecting traders. Few enlightened farmers involved in trading as a part time job adopt the third strategy. The major obstacles forced the farmer-traders to give up potato marketing include, high marketing costs, discriminatory practices by traders and lack of capital

Marketing problems raised by farmers

- Nature of produce: Potatoes are highly perishable and must be marketed immediately. The prices also drop dramatically following the pick harvest.
- Lack of information on market prices at the major markets. Farmers do not have access to the major markets that influence market prices in the local market. The traders on the other hand are well informed about the prices in the major markets and could negotiate accordingly.
- The number of buyers / traders in each locality is limited, leaving producers with very little choice to negotiate.
- Potato prices are set on unstandardised volumetric units. Packages such as timbo according to farmers are a means of exploitation.

1.11 Evaluating the Marketing Opportunities for Shea nut products in Uganda

By R.S.B Ferris¹, C. Collinson², K. Wanda¹, J. Jagwe¹ and P. Wright³

1- IITA, 2- NRI, 3 Independent consultant

This study was commissioned to evaluate the economic and environmental prospects for the Shea sector of Uganda. Specifically the study aimed to evaluate the market prospects for a range of low value, traditional products and high value, export Shea products in the local, national and international markets. *Vitellaria paradoxa*, the Shea butter tree, grows throughout Sahelian Africa, from Senegal to Ethiopia. The trees are truly multi-purpose and are highly valued not only for the economic and dietary value of the cooking oil, but also for the fruit pulp, bark, roots and leaves, which are used in traditional medicines and for the wood and charcoal, used for building and cooking fuel. The survey confirmed that Shea is a significant source of income for the community in the Shea producing districts of northern Uganda and that within the local market, Shea trees are valued for cooking oil and other local products including traditional medicines, charcoal, and building materials. In terms of gender, Shea is a crop which is almost exclusively the domain of women. The crop is gathered by women and children, then processed and retailed by women. Men are mainly involved in wholesaling and storage of shea nuts. Surveys found that for women involved in shea nut and oil sales, this commercial activity was likely to be the most lucrative commercial activity of the year and therefore any interventions which will increase demand for Shea, will almost certainly make a significant contribution to household financial security. In the global market, the trading links for West African Shea products are well defined and there has been a long standing export of shea nuts and butter to European and North American countries. The primary export market for West African Shea butter is as a substitute for cocoa butter in the chocolate and confectionery industries. There is also a renewed interest in Shea butter from the cosmetics industry, particularly the high value niche end of the market. It is this high value market which has been of interest to Shea groups in Uganda and recent chemical analyses of Shea butter extracts indicates that Ugandan Shea has most similarities to olive oil, which indicates two potential markets, in cosmetic and oil production. Current prospects for expansion of Shea processed products in Uganda include the local oil, improved oil and cosmetics markets. Cosmetics products would include lip balm, body lotion, hand cream, and soaps. In regard to high value cosmetics the target market would most likely be small companies and specialist cosmetic ingredient suppliers who would be willing to buy unrefined Shea butter from East Africa. In Uganda there are a number of interested agents who have expressed a desire to invest in the Shea markets and business plans for these agents have been reviewed with some preliminary forward plans outlined.

Theme 2

Developing systems for improving market support services

2.1 Marketing Information Services in Uganda

By A. Muganga¹, G. Okoboi¹, N. Namanya¹, E. P. Robbins² and S. Ferris¹

1-IITA, 2-CMIS

Globalisation, free trade, population growth, urbanisation, and trends toward reducing state intervention in agricultural marketing present new and complex challenges for those institutions whose goals encompass the reduction of poverty, the provision of food security and the promotion of economically sustainable development in Uganda. Likewise, the livelihoods and well being of small holder farmers and the rural population in general depends to a large extent on being able to adapt to the changing circumstances brought about by these macro socio-economic and institutional shifts. In particular, the reduction of rural poverty will rely heavily on identifying and developing competitive economic activities that generate income and employment in these areas.

Prior to market liberalisation, agricultural development goals could be developed within fairly defined limits as global markets were not well integrated and countries such as Uganda followed a traditional supply of commodities to trade partners through national commodity marketing boards. In the past 15 years these framework conditions have changed radically with the disbandment of marketing boards and the opening of trade borders.

Currently world trade policy, globalisation and regional trade schemes are the key factors driving market forces and countries such as Uganda face serious economic challenges due to declining GNP revenues resulting from increasing competition in their external and internal markets. Current prices for traditional export crops are now at 30 year lows, (Public Ledger, August 2001). Increasing competition between developing countries, not only forces down prices but also leads to shifts in geographical market share. Inevitably, it will be the poorest and countries that are least attuned to market conditions that are most vulnerable to losing market share as they will be most unable to adjust to new market conditions and product requirements. For Uganda this is a real threat as coffee prices are being undermined by the current oversupply, failure of the coffee retention scheme and the effects of the coffee wilt disease. Market information channels can be used to ameliorate some of these problems but as yet these opportunities have not been well exploited.

At the same time, internal commodity markets are also under pressure as farmers contend with inefficient domestic marketing systems, poor infrastructure, the influx of low cost imported goods and consignments of food aid and food aid programme that undermine the local market systems.

When questioned, most farmers are extremely anxious about their market prospects and there is considerable frustration on the part of farmer's to find more stable markets or at least understand the dynamics of the market. This information gap, to a large extent stems from the lack of agricultural support services which have arisen due to agricultural policy reforms which have deregulated agricultural markets, reduced trade barriers and subsidies, but have failed to introduce conducive policies and farmer service support programmes that can assist the emerging private sector, particularly small businesses, which are key players in developing agro-food chains. The results of policy failures result in poor market performance and low competitiveness

means that producers receive low farm gate prices and consumers face rising retail costs due to the high transaction costs.

Although many farmers are now starting to access market information for the first time, it is clear from interviews in the country, that most producers still do not receive marketing support, have abandoned collective or co-operative market action due to past mismanagement and consequently operate on the basis of weak market signals that lead to cyclic gluts and shortages in the marketplace. The decline in rural banking also makes it difficult for small rural entrepreneurs to access credit for the development of new business ideas and therefore producers and processors are unable to take on new technologies even if they were willing to test more risk but higher return options.

This proposal seeks to significantly strengthen the existing marketing information programmes being developed in Uganda, with a range of partners that will assist in the collection, analysis and dissemination of accurate and timely market information. The project will also seek to make strategic alliances with other partners such as ADC (IDEA), ACDI / VOCA, CLUSA, CEDO and other NGOs who are working to assist farmers use marketing information and develop collective marketing groups that can best take advantage of market information in their trade negotiations.

2.1.1 The IITA Market Information Service

The FOODNET, Market Information Service (MIS) project started in September 1999 with the aim of collecting, tabulating, analysing, interpreting and disseminating timely and accurate market data and intelligence to the farming and trading community in Uganda. The service's objective is to improve market access, transparency, market efficiency and to increase market competition in Uganda. This service is one of the activities of the Regional FOODNET project for Marketing and Postharvest Research in Eastern and Central Africa. The MIS project has two integrated components. The macro level MIS currently funded by the United States Agency for International Development (USAID) is designed to collect and disseminate national and regional market information to planners, government agencies, food security agencies and large-scale traders. See Annex 1a. The micro-scale MIS activities currently funded by the, (CTA) is a pilot project designed to test a model for the provision of market information to small-scale actors in Uganda's agricultural sector. These services were initiated in the aftermath of the collapse in May 1999 of the Market News Services operated by the Ministry of Trade. See Annex 1b.

Current status of the Macro MIS. Since September 1999, IITA has operated a Macro-MIS in Uganda where information on prices of 32 agricultural commodities from 17 districts is collected weekly See **Annex 2**. Information on prices and traded volumes is also collected every day from three major wholesale markets in Kampala, for list of commodities. In addition, information is collected on weather conditions and forecasts, road conditions, import and export activities and regional and international markets for products produced in Uganda.

Dissemination of market information. The market information is made available to clients, by e-mails, fax, telephone and during regular meetings, to Government Ministries, FEWS, major trading companies, local government, NGOs, farmers' associations and other organisations in the agricultural sector. The information is published in one Ugandan daily newspaper and the Eastern African Newspaper. The information base is also constantly on-line via the FOODNET MIS website. Price information is being disseminated via emails to 10 major agencies every day and to a list of 104 clients on a weekly basis. The information is also broadcast to the mass population in the agricultural sector through Radio Uganda and other commercial FM radio

stations, **Annex 3** showing radio coverage. The Foodnet MIS has been particularly successful in making linkages with commercial radio stations to disseminate information regularly and at a low cost and this has become an integral part of the micro-services.

Internet - SQL database and website front page to compare commodity prices across Uganda. The Ugandan MIS has developed a sophisticated internet site, which is updated with market information on a daily basis. The full price database can be accessed on line and the website has recently been modified, such that it is now possible to query “Kampala’s Prices Today” for Kampala district. Users can also compare prices of two commodities at wholesale level from selected districts. Figure 1 shows the interface which accesses the SQL database at the front page of the web website to compare commodity prices across Uganda. The Website is www.cgiar.org/foodnet. See clip in **Annex4**. The market information team is also developing software for inputting prices into a SMS mobile phone message with MTN. This will be applicable to coffee, cotton and fish because small-scale traders for these products have access to mobile telephone and would be willing to get market information at a cost. The same arrangements are underway with CelTel. Based on this work, MTN are now developing a business plan to develop SMS messaging in Uganda through their databases.

Limitations of the Macro service. Despite the success of the national macro-based service, it is fully recognised that those in most need of market information are the millions of small-scale farmers, processors and traders who represent the overwhelming majority of the Ugandan agricultural sector. Any organisation wishing to provide an appropriate dose of timely and accurate information, designed to strengthen the bargaining position of the small-actors in the Ugandan agricultural sector is faced with certain difficulties. The major problems are that:-

there are many languages spoken in Uganda
the level of literacy is just slightly above 50% and
the understanding of how markets operate is low.

In addition, different groups of market actors need different types of information depending on the crops they grow, their location and the degree at which they co-operate with each other. Because of these problems, IITA-FOODNET in conjunction with CTA, has designed adopted a new model for the provision of market information based upon extensive research over the last four years.

The New Micro MIS Model

IITA with support from CTA has established three pilot projects to test the new micro-MIS model. Its service is decentralised and includes the participation of farmers, traders, processors and retailers as well as local government structure, farmers unions and non-governmental organisations working in the target areas. This service is aimed to benefit the small players who comprise mostly of farmers, traders, processors, non-governmental organisations and other development agencies. The micro MIS provides localized information and utilizes the information and analytical skills at the Macro MIS. Information is collected from within the pilot sites from the markets in the major towns and agri-business development centres, regional networks and NGOs, local and national newspapers and the Macro MIS

In this model, data and market information is collected at least twice a week. Data is disseminated in the form of frequent radio broadcasts on FM radio stations, using the local language, and in local newspapers and word of mouth. This site is situated in Eastern Uganda and covers the districts of Bugiri, Iganga, Mbale, Jinja, Kamuli, Tororo, Busia and Pallisa,

which, together, have a population of about 5 million people. This area has a very high potential for exporting maize and beans and has received assistance from the Agri-business Development Centre. The problem in this area is that there is very poor organisation of farmers in the area of marketing. In addition, the producers here have no access to market information at all. In the second pilot site in Lira district, northern Uganda, many farmers have formed themselves into groups but lack the experience to collectively market their products. For this reason, the project includes provision for training farmers in these skills. It is precisely this type of activity that IITA-FOODNET is linking to other collective market support groups such as CLUSA, CEDO, ACDI/VOCA and others. In the third pilot site, the micro MIS provides trade facilitation in the form of assistance to organised farmers and traders linking them with larger traders and new, larger markets. The project will concentrate on developing markets for beans and maize in this area. The farmers in this area are well organised and have benefited from training provided by the Irish Fund for Cooperative Development (IFCD). Information requirements in this area are somewhat different from those in the other two sites. The project aims to provide detailed information on the names, location, buying prices and trading terms offered by maize and bean traders who show an interest in buying from these farmers.

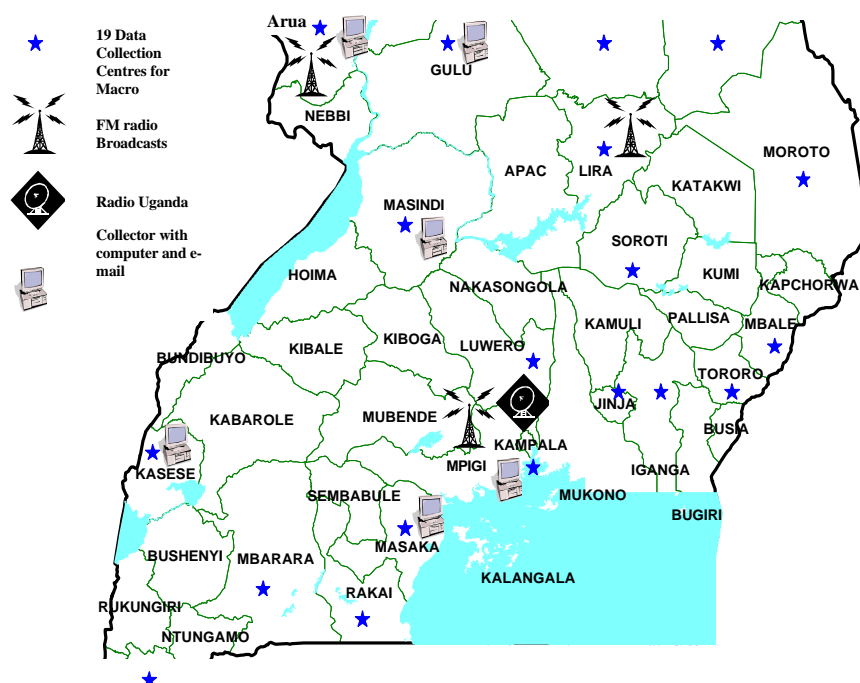
The benefits of market information.

i) Government would benefit from a pro-active and robust policy to provide Market Information to producers and traders as a public good.

ii) The benefits can be high. For example, in a rapid analysis conducted in 2000, in Pilot site 1 from the MICRO MIS, it was calculated, based on maize prices at that time, that with an investment of \$30,000, that these fund could generate up to 3 million dollars to the beneficiaries in the area. This is the type of re-allocation of funds / income from urban areas to rural communities, which is central to the strategy on which the PMA / NAADS approach is based, see cost:benefit overleaf.

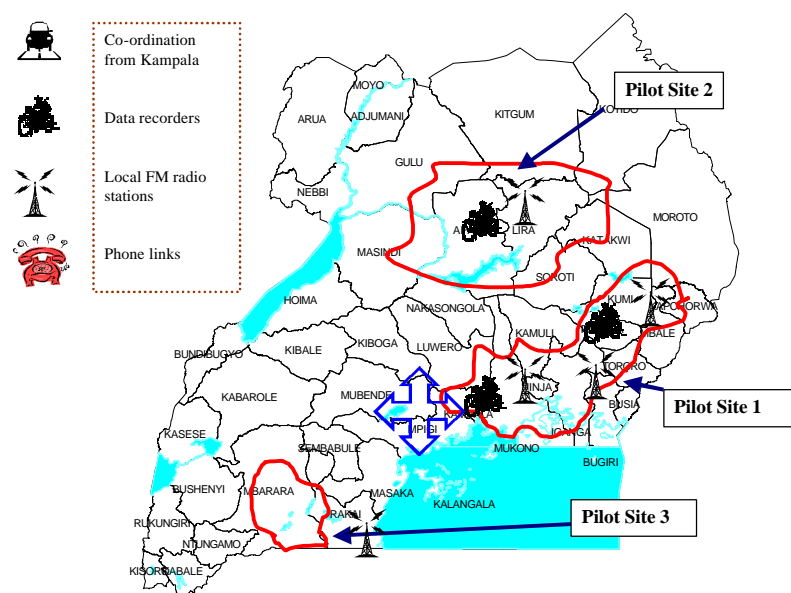
iii) Regionalisation:- Given that trade is both local, national and regional there should be additional analysis to evaluate and then promote the idea of regional market information to facilitate regional trade. Such a system could be implemented through intergovernmental bodies such as ASARECA, IGAD and FAO.

National Information Service



Annex 1b

Local Information Service



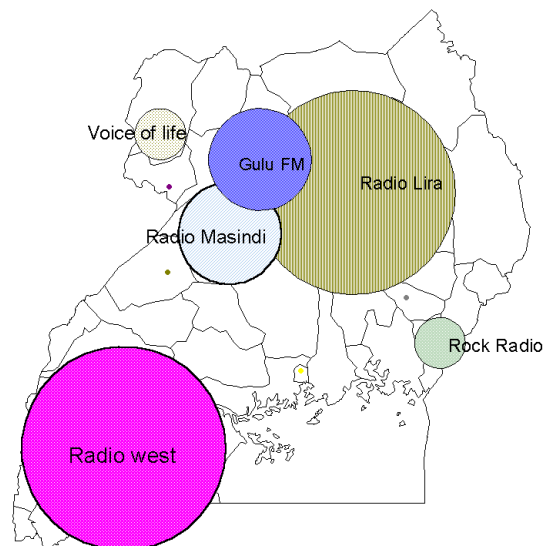
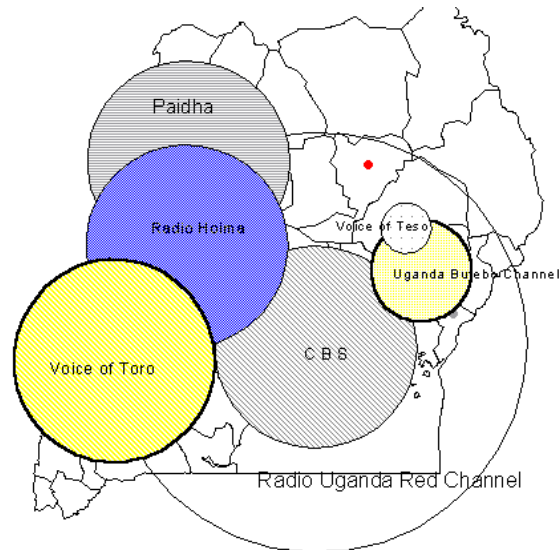
Annex 2

Commodities monitored and corresponding markets.

Daily Prices		Weekly Prices	
CROP	Markets	Comodity	Market
Onions	Markets	Matoke	Arua
Maize Flour	Owino	Fresh Cassava	Gulu
Maize Grain	Kisenyi	Sweet Potatoes	Iganga
Millet Flour	Nakawa	Beans	Jinja
Millet Grain	3 Commercial buyers	Beans Other	Kabale
Rice Threshed		Cassava Chips	Kasese
Sim Sim		Cassava Flour	Kitgum
Sorghum Beer	Levels	Groundnuts	Lira
Sorghum Flour	Wholesale	Maize Grain	Luwero
Sorghum Food	Retail	Maize Flour	Masaka
Beans Large	Off Lorry	Millet grain	Masindi
Beans Medium		Millet Flour	Mbale
Beans Mixed		Rice	Mbarara
Beans small		Simsim	Rakai
Cowpeas		Sorghum	Soroti
Groundnuts		Sorghum flour	Tororo
Grams		Soya beans	
Soya		Sunflower	
Cocoa		Cattle steak	Levels
Ginger		Chicken	Wholesale
Sunflower		Goat	Retail
Banana/Matooke		Fish	Off Lorry
Cassava Chips		Milk (one litre)	
Cassava Flour			
Cassava Fresh			
Potato Irish			
Potato sweet			

Annex 3

Map 1 and 2: Effective coverage of market information programs in Uganda for selected radio stations.



Annex 4

Figure 1: New query incorporated in FOODNET Website for accessing market prices.

The screenshot shows a web form with a light orange background. At the top, it says 'Kampala Prices today for' followed by a dropdown menu set to 'Maize_grain'. Below this is a horizontal line. Under the line, it says 'Current price of' followed by another dropdown menu set to 'Maize_grain'. Below that, it says 'Choose District' followed by a dropdown menu set to 'Gulu', then 'AS COMPARES TO' followed by a dropdown menu set to 'Jinja'. At the bottom of the form is a button labeled 'Get Prices'.

Once the results are displayed, the Internet user who is not familiar with prices in Uganda shillings has the option of converting the prices to dollars or any other world currency by clicking on the currency converter which displays below the results (see Figure 2).

Figure 2: Output of the SQL price query.

Maize_grain	
District	Price
Gulu	150 UGS (Ugandan Shillings)
Jinja	100 UGS (Ugandan Shillings)
Kampala Price of Maize_grain : 190 UGS (Ugandan Shillings)	
Currency converter	Today's prices

In addition, a new interactive website for market Information with capacity to plot online graphs and present market information in a time series format is under construction. This will initially provide users with online historical prices of agricultural commodities for the last 2 years. Once the system is running, other data sets will be added. This will include the 5 year data set from the Market News Service for selected crops whose prices were being monitored up to May 1999.

2.2 Pilot study for the improvement of the agricultural market information service in Tanzania

By E.R. Mbiha¹, G.C. Ashimogo¹, A.A. Temu¹, D.Nyange¹, A. Muganga², S. Kolijn³ and S. Ferris²

1- Sokoine University Tanzania, IITA-Foodnet, IITA-SARRNET (FOODNET Grant 1)

This report reviews the current status of agricultural Market Information Service (MIS) in Tanzania as a part of a broader research on improving agricultural market information services in Tanzania. Specifically the study has attempted to accomplish the following, (i) to review the organization of MIS in Tanzania, (ii) to evaluate procedures for data collection, processing, storage and dissemination (iii) to assess how MIS has adapted to changing economic policies and (iv) to make recommendations on how to enhance the efficiency of the current Tanzanian MIS.

Prior to initiating reforms towards a market-oriented economy in 1984, Tanzania was a state-controlled economy. During that time, the government directly intervened in the market through price fixing, imposing restrictions on trade, monopolizing the commodity market using state owned companies and subsidizing the agricultural inputs and food commodities. In 1986, Tanzania made a firm commitment to pursue a market economy and to undertake the Structural Adjustment Program (SAP). The new policy places a clear restriction on the actions that the government can adopt to achieve its objectives. Except in a very limited case such as restocking of the emergency grain reserve, the government is not supposed to intervene in the food markets; rather its role has been limited to facilitate and promote the participation of the private sector. MIS in Tanzania dates back into 1970 when the Marketing Development Bureau (MDB) was established under the Ministry of Agriculture. The project was funded by UNDP while FAO was the participating and executing agency. The project came into full operation in 1972. When it started, information reported by MDB was official commodity prices and volumes. From this review it is obvious that the government has done much effort to streamline the MIS in order to accommodate the recent policy changes. However, the following recommendations are made as suggestions to make the MIS more efficient.

Sampling (markets and commodity coverage). Currently government MIS covers 27 commodities in 44 markets all over the country. It would be advisable to reduce the sample size by selecting 'strategic markets' and most important commodities while maintaining good representation of agro-ecological zones, assembly and consumers markets. Reducing the sample size will ensure a closer monitoring of data collectors and with current budget limitations, a manageable sample is necessary to ensure sustainability of financial support.

Type of Information Collected. Though it is documented that commodity volumes are collected, such information is not available in the database. Volumes are an important component in market data analysis and therefore, it is more appropriate to reduce the sample size, i.e., to one or two indicator markets to gauge volumes being traded. Volumes should be collected regularly in one of the main terminal markets and thereafter not to attempt to collect this information in other sites.

Data transmission to processing centre. Currently information from district and regional monitors is transmitted through radio-call network and postal mails. Due to increasing accessibility to fax, internet, email and mobile phone network in regional and district towns, use of such technology where available could make reporting of information more timely and less

costly. For example Vodacom Text Message cost US \$ 0.06 per message regardless of the length. Sending an email costs TSh., 300 –500 per 15 to 30 minutes.

Data processing. The current database needs to be updated and a more user-friendly software installed. FOODNET has already started to support the MIS department by providing computers to facilitate installation of new software. However, the department needs continued support in capacity strengthening in terms of IT and analytical skills.

Information Dissemination. Market information is currently published in English newspapers. However, most traders are primary school graduates and therefore need to have more market information published in Swahili.

Institutional networking. To avoid duplication of information reported by various MIS providers there is a need to establish a network of agencies providing the service. Such networking will also allow more geographical (markets) and commodity coverage while minimizing costs of MIS. Inconsistence in information reported will also be avoided.

Units of Measurements in Reported Prices and Volumes. Standardized measuring facilities are lacking in most markets and commodities. For example bags of maize and rice differ from market to market and seasons. When prices are converted into standardized weights such as Shilling per kilogram more precision is gained. The Regulation Section of government MIS need to undertake a study on how to cope with this and possibly regulate markets through legal enforcement. Use of standardized scales is gaining popularity in retail urban markets for some commodities. However, adoption of such practice needs more incentive and legal enforcement. Grades and standards are critical elements for transparent markets and these measures need to be undertaken to enhance both consumer and trader confidence in the marketing system.

Promote Participation of Private Sector in MIS. There is a need to promote more participation of private sector in providing MIS through public awareness campaigns and contracting some MIS tasks to private sector. This partnership may reduce costs to the government and may improve the quality of the service.

Changes in the Organization Structure of the Ministries. Frequent changes in the organizational structure of the Ministry is negatively affecting the performance of MIS especially in maintenance of database, coordination of reporting system for markets in the districts and regions to the central processing unit. Discontinuity of many time series and loss of records is the evidence of the negative impact of frequent changes in the Ministries. To minimize such negative changes at least at the Ministry level, MIS department need to be moved as unit instead of splitting or merging it with other departments.

Conclusions. Currently the MIS service is functioning, but there are a number of changes that can be made to improve the service and to link this centre in with other MIS providers. This study aims to work on the policy and institutional changes that need to take place, and FOODNET is also working on the capacity building side of this process and has hired a person to work with the MDB in Dar –es-Salaam and has purchased new computer equipment to facilitate data base development and information flow.

2.3 Farmer based network for local market information centre in Kiambu, Kenya

By C. Gitao+, P. Chege+, J. Mwaura*, J. Mushangi#, A. Mukhebi@ and R.S.B. Ferris
(FOODNET grant 2) +Immediate communications Ltd, *Director-SHELTER 2000 , #Market
information Ministry of Agriculture(MoA), @Kenya Agriculture Commodity Exchange(KACE)

The Kiambu market information service is a new private sector initiative aimed to empower farmers through the provision of market information. At present the only prevailing market information service is through the Daily nation column provided by market information branch, Ministry of Agriculture. This method is slow and often the prices are out of date. Our niche is the rural farmers in Kiambu and the larger Central Province/Nairobi. As suggested by the Ugandan MIS, the most rapid means to provide up to date market information to farmers is via radio, which is now possible through local FM stations. The project has established partnerships with two radio stations, Coro FM and Kameme FM and this has enabled the project to cover all districts within Central province. A cost-effective method to collect information was devised to collect information from four markets including Karatina, Thika, Kutus, Kagio. This system relies on high school educated traders making a reverse charge calls. Their information is counterchecked by regular survey visits.

Many farmers have responded positively to the MIS as reflected by the following examples:
Case 1: In Kawangware, some farmers after hearing the programme, relayed the information to Timboroa (In Rift Valley province). The following market day saw a large supply of potatoes from Timboroa. Case 2: In the Kiambu market, one trader who buys potatoes from Kinangop observed that the farmers were fixing the prices on the information obtained from the broadcast. Consequently, the price for a bag of potato from the farm gate increased by sh100 as they now had a bargaining position. In contrast most traders were not receptive to the service. Case 1: One trader in Kiambu felt that the market information service was creating awareness to the farmers on market trends. She felt that the prices should be looked at from the consumers side as they too bought the produce according to the prices broadcast. Case 2. A major egg supplier located in the city centre noted that farmers get a raw deal since they are mostly price takers. She observed that with introduction of the information service farmers can have more leeway in setting prices for the eggs. This, she noted, would minimize price differences in the same market, for instance, Wangige market where she obtains her supplies. Case 3 This trader from Kiambu felt the market information service was a market spoiler. She felt that with the introduction of the information service the farmers were asking for a higher price as opposed to earlier times. She would rather withhold the information from the compiler.

In conclusion, the services have been very successful according to many farmers and some traders. They have adjusted to these services and some have become daily listeners and look forward to comparing prices in the different markets.

2.4 Evaluating Commercial Channels for Delivery of Public goods Information

By G. Bell^{1/3}, P. Plovyt¹, P. Etiang¹, A. Muganga², G. Okoboi², and R.S.B. Ferris²

1- Rock Radio Board Member, 2 – IITA-Foodnet MIS, 3- Radio Works Director

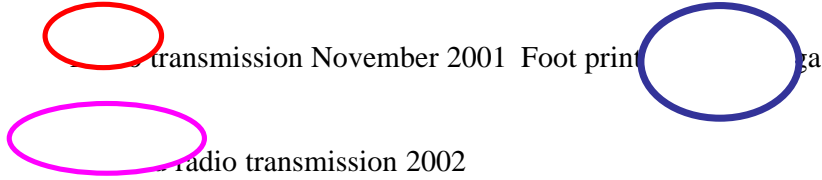
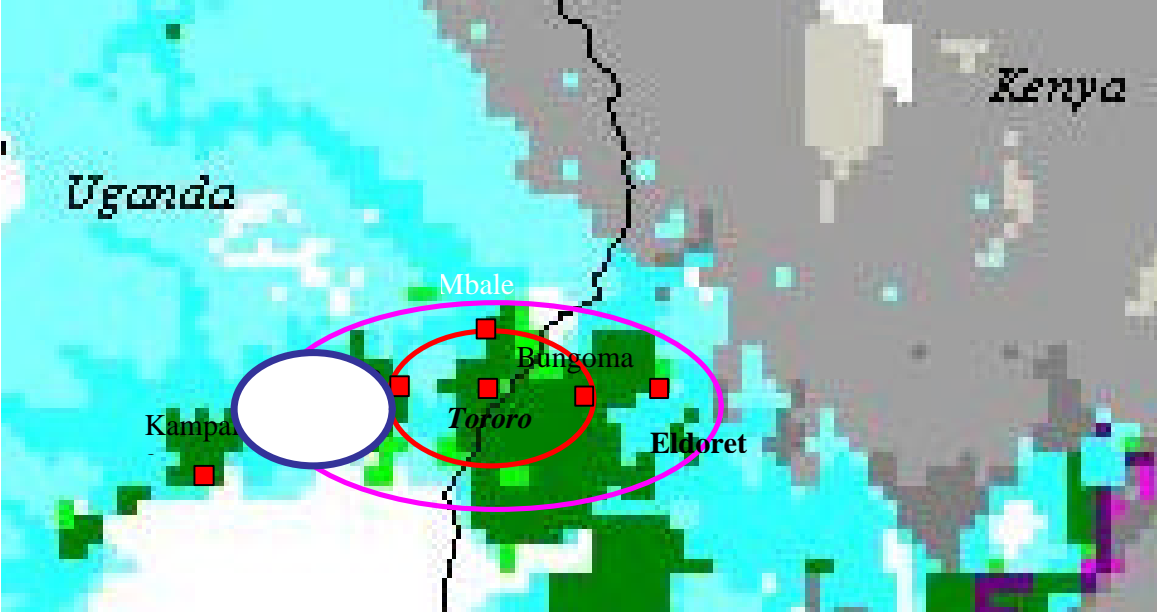
Following the successful implementation of the micro Market Information Service in Lira district, where the marketing officer is closely associated with a local radio, “Radio Lira”, the aim of this project was to test the service in an area which was not supported by a local FM station. The new project was seeking to develop a commercially sustainable means of delivering agricultural advisory information. The site for the new station was based on a market access map developed by S. Woods, 1999. The map, see below, provides a colour coded pixel map of those areas which have best market access. This analysis is based on a series of overlays including roads, population and suitability for agricultural production. The project was seeking to work with a commercial station and develop a sustainable means of providing market information service to an area which is highly productive and also has high prospects of national and cross-border trade.

At present all MIS programming in Eastern Africa, is paid for on a fee basis for air time. This project adopted a more venture capitalist approach, by negotiating with a number of media specialists to buy sufficient air time, i.e., 3 years of air time, to encourage the private sector to make a complementary investment and establish the radio station. For the private sector, this was attractive as it provided enough capital at one time to establish the station and from the institutional perspective it enabled the MIS project to negotiate an airtime agreement that would be favourable to long term provision of market information. The commercial wing of the company is making standard sales of air time with commercial companies who wish to promote their goods and offering preferential rates to other developmental projects in key public goods areas such as agriculture, public health and community development.

In addition to being located on a major trading access, the Radio is also situated next to Tororo rock which is a natural volcanic plug, 1000 ft above the plain. The station is working in collaboration with the local mobile phone company to establish an antennae on top of the rock, which would be at 4030 ft, and will provide a considerable footprint in the on a relatively small transmitter. Having signed the agreement, the Radio started broadcasting from Tororo in June 2001, with a 300 watt transmitter. This equipment provides a footprint of approximately 50 km radius around Tororo rock, supplying information coverage to approximately 1 million people in the zone from Iganga up to Bungoma. In the future, when the radio station has achieved a stable income, the station will upgrade facilities to a 5 Kilowatt transmitter which will expand the footprint area and signal strength to provide transmission coverage to more than 5 million people in the cross border area, from Jinja to Eldoret.

Based on the success of Lira and Tororo, Radio Works has opened another station in Jinja, and fortunately, this station is located in the same town as the third micro market information officer, and therefore, the micro service has already established a link with Lusoga radio to provide localised market information, in the local language, targeting the needs of the local farming community. The combination of Lira (4 Million), Tororo (1.5 Million) and Busoga (1 Million) radios already has a combined population coverage of more than 6 million people and therefore the rate of localised coverage for the market information service has increased dramatically over the past year. There are also plans to develop two more local radio stations over the next 6 months and these will also be linked into the local MIS service when they come on air.

Market Access Map, from Woods et al, 2000.



	Low Pop Dens & Low LGP	Low Pop Dens & High LGP	High Pop Dens & Low LGP	High Pop Dens & High LGP
Low Market Integration	LLL	LLH	HLL	HLH
Medium Market Integration	LML	LMH	HML	HMH
High Market Integration	LHL	LHH	HHL	HHH

References.

Stanley Wood, Kate Sebastian, Freddy Nachtergaele, Daniel Nielsen, and Aiguo Dai (2000) Spatial Aspects of the Design and Targeting of Agricultural Development Strategies
Andrew W. Shepherd (inprep) Farm Radio as a Medium for Market Information Dissemination

2.5 Strategies for the improvement of poultry feed industry in Tanzania

G. H. Laswai¹, Anna A. Temu¹, Salome K¹. Mutayoba, S.J.S. Mosha², S. Kolijn³, J. Jagwe⁴, K. Wanda⁴, S. Ferris⁴, B. Ospina⁵, J. Buitrago⁶

SUA, TBS, IITA-SARRNET, IITA-Foodnet, CLAYUCA, Independent consultant

This project was developed to analyse the value-adding processes and quality control mechanisms in the production of poultry feeds and identify the best opportunities for incorporating lower cost substitutes into the feed such as roots and leaves from cassava and sweet potato. A rapid market survey was executed in collaboration with SARRNET, CIAT and CLAYUCA, FOODNET, TFNC and TARP II-SUA in February 2001. The purpose of the study was to find possibilities of commercialising cassava through its inclusion in various processed products. This survey took a broader perspective and visits were made to animal feeds, bakeries, small food processors and non-food firms. The opportunities for the inclusion of cassava in the various products were identified, for full report see Subcontract Agreement for the Execution of USAID/SADC/SARRNET Grant No. 690-G-00-99-00258-00 between the International Institute for Tropical Agriculture and the Centro Internacional de Agricultura Tropical.

From the poultry feed sector the approximate annual volumes of feed were determined, Table 1. In addition the possibilities of including cassava into their products and potential collaboration in research were discussed and several joint projects were developed and are currently being implemented. The rapid linkage to the private sector was a very encouraging given that prior to the market survey, there were no linkages between SUA and the private sector.

Table 1: A list of feed processing firms visited in Dar es Salaam and Kibaha and their approximate volumes

Feed Sector	Volume (tons/Year)
Interchick	13,200
Riami Miller	720
Jadide	7,800
Gold Feed mills	360
Top Miller	520
A-Z Feed Miller	1,300
Km Animal Feed	NA
Igo	6,240
Mkuza chicks	10,000
Farmer Miller	10,000
Kibaha Education Centre (KEC)	728
Interfarm	200

The processors provided information on various feed formulations which varied between batches and segments within the market due to availability and price of the raw materials. The different types of poultry feed products produced by the different mills and approximate prices are shown in Table 2.

Table 2. Types of livestock Feeds produced by the feed mills and selling price

Product	Price range (Tsh./50 kg bag)
Broiler mash	7,500-8,000
Layers mash	7,000-7,500
Growers mash	5,900-6,500
Broiler starter	7,700-8,200
Breeder starter	8,200
Protein concentrate	5,000-6,000

The national capacity of the livestock feeds produced is about 300,000 metric tonnes. Production is mainly concentrated in Dar es Salaam. The annual average production level of livestock feeds in the visited sectors ranged from 200 to 13,000 metric tonnes. The types of the feed produced were mainly Broiler mash (55-60 %), layers mash (30-35%) and less than 5% of the other types shown in Table 2.

Raw materials commonly used in the formulations were maize, maize bran, fishmeal, cotton seed cake, sunflower seed cake and wheat. Other ingredients include salt, bone meal, limestone, dicalcium phosphate and vitamin-mineral premixes. Essential amino acids, such as lysine and methionine are also used in some sectors. Cassava is not used in livestock feed processing. The prices of the different raw materials are quite variable depending on the source and season. The strategic grain reserve was shown to skew the prices of maize hence cause price imperfection. Some large feed millers have vertical integration in their operations. Some have hatcheries, processes feeds, have farms, sell birds and buy birds from their clients, sometime on exchange with feeds and sell to their agents. Some provide extension services to their clients. The feed millers have recently revived their organisation, Tanzania Feed Millers Association (TAFMA)

Currently, minimal attention is being placed on the standards for the poultry industry, from production, processing to marketing. For example, only about 5% of birds produced are sold as processed chickens (dressed and weighed). The rest (95%) are sold as live birds. Poultry keepers prefer selling broiler at less than 6 weeks, rather than the recommended 8 weeks and due to lack of market standards and no weighing of sold birds, there is no incentive for processors to improve the quality of birds on the market and therefore little incentive to improve the quality of processed feeds.

The major constraints identified with the feed processors were:

There is general lack of information on optimal feed formulations and other business aspects related to the industry

The millers had no contacts with research agencies within Tanzania, some companies did use local consultants on an adhoc basis.

The millers had little access to current information related to the feed industry and only one feed miller had access to a computer and the internet. This was the largest miller. Most other millers were either reliant on supplied information from trade sources or were not able to get new information.

No millers had regular access to formulation software to improve the quality of their feeds based on access to feed ingredients which are constantly changing.

Lack of update nutritional values of raw materials and processed feeds and no access to new ideas for substitution of higher cost materials with low cost substitutes such as cassava.

There are some unfavourable trade policies, such as taxes for manufactured goods versus imported goods and taxes for large-scale versus small-scale producers. For example manufactured goods pay a value-added tax (VAT) of 20% and less for imported goods. VAT is only been paid by large-scale producers and exempted for small-scale producers.

Marketing of feeds is also limited. Most of the time in cash as there is little customer loyalty. None of the Millers, bar one, had access to business related software

Basing on the above observations the following were suggested as possible interventions;

Supply of price lists of raw materials to the market

Provide business training and business information for feed millers, livestock keepers, etc.

Provide information accesses to feed millers and farmers (e.g. Internet e-mail, price optimisation software etc.)

Sensitisation on cassava usage as a raw material to feeds. Implement practical trials of cassava as an input into feeds.

Demonstrations on the utilisation of cassava roots and leaves in various forms to farmers.

The development of the business centre as a public –private sector interface is currently underway and agreements are being developed between IITA, SUA and TFMA to develop a the center with the aim to strengthen the ability and the availability of information and tools to plan and undertake agro-industrial research. The methodology for developing the partnership is based on the model developed by CIAT for CLAYUCA and that being developed by ISNAR for agro-industrial partnership development for Latin America. This is a relatively new area of research for agriculture, but is one that has good prospects for sustainability as it is directed towards and hopefully eventually taken over by the private sector.

2.6 Information Network for Postharvest Pest Management and Marketing

N. Holst¹, A. Agona², Silim Nahdy³, P. Fandohan⁴, J. Hounhouigan⁵, M. Halm⁶, K. Henriksen¹, H. Skovgaard⁷, H. Wolffhechel¹, E. Kirknel¹, O. Bøjer¹, S. Ferris⁸, K. Hell⁸, M. Wood⁹

DIAS, NARO, NAADS, Benin postharvest extension, Universite Nationale du Benin, Food Research Institute Ghana, Danish Pest Infestation Laboratory, IITA, Agri-business Development Centre-Uganda

In Africa, most staple crops are kept in store until sale or consumption. Storage is maintained using traditional methods and postharvest treatments. However, with the advent of higher-yielding varieties and the introduction of the exotic pest, the Larger Grain Borer, farmers are now experiencing considerable losses. In response farmers are applying inappropriate (toxic and ineffective) pesticides to their stored produce. Thus public health is at risk due to food insecurity and food contamination, the latter encompassing both pesticide residues and mycotoxins produced by fungal attack during storage.

Following the shift towards more liberalised markets, as a result of structural adjustment programmes, subsistence farmers have been forced to adopt more commercial farming techniques. The recent effects of globalisation has also put increasing pressure on producers, traders, processors and input suppliers alike, to improve their production and processing efficiency to supply an increasingly competitive market place. Poor physical infrastructure constrains the free flow of agricultural products and lack of access to information puts additional

obstacles in the way of rational marketing, in which supply and demand are known, and prices reflect supply and demand. This opaqueness of the market may cause apparent food shortages, low farmgate prices, and inefficient mobility of farm produce.

Improved methods of pest management exist but this information has in many places not reached the farmers. Developing early warning systems for postharvest pests and diseases and combining these with information services on agricultural products, marketing and postharvest management (e.g., Internet-based and broadcast into rural areas by newsletters and radio) will provide valuable tools to support farmer and trader decision-making.

Whereas the implementation of information dissemination services requires mostly soft technologies (organisation, skills, research), the enhancement of food safety demands hard technologies in the form of high quality laboratories to analyse pesticide residues, mycotoxins and other toxins. Such laboratories would provide the capacity for food-safety monitoring and could be economically sustainable due to the increasing demand from the food industry, consumers and policy-makers for quality control.

Current state of research

The planned project springs from existing research environments at DIAS and IITA, dedicated to the application of information technology to solve postharvest problems, and from NARO which, as head of the national Postharvest Research Programme in Uganda, is in a unique position to offer office and laboratory space and a group of researchers and students specialised in stored product pests of the region.

Through year-long involvement with Uganda National Farmers Association (UNFA), Danida has been supporting the extension of new knowledge to farmer communities. Further up the producer-trader-consumer chain, the Foodnet facility of IITA has aided knowledge transfer to food traders through close linkage with a number of FM radio stations.

In West Africa, Danida has been supporting research in postharvest management and processing through (1) the Agricultural Sector Programme in Benin, (2) research grants to IITA/DIAS, and (3) the ENRECA project on Traditional Fermented Food Processing, a twinning of Royal Veterinary and Agricultural University, Denmark (KVL) and Food Research Institute, Ghana (FRI), now extending to other countries in West Africa including Benin.

Project objectives

In this project, collaborative research will facilitate comparative studies between East and West Africa, highlighting common solutions, and building up and drawing upon a common pool of expertise. Likewise, extension services and NGOs in East and West Africa will benefit from being brought together, drawing on each other's experience and finding common solutions to common problems.

A first step in the new project will be the rehabilitation of premises at NARO to establish a postharvest laboratory (PhLab). There, one NARO employee and one IITA employee will be permanently stationed to oversee running activities, while students and researchers of the project will be staying for shorter or longer visits.

Project objectives – Uganda

PhLab established, manned by NARO and IITA and equipped to conduct storage ecology and basic quality studies.

Client Information Services facility established on Internet and managed by PhLab.

Local information collected, synthesized and made accessible through Client Information Services: IPM and quality control recommendations, cropping systems and storage cycles, prevalent pest and diseases, sampling protocols, grey literature.

Technicians apply standardised sampling procedures.

Major postharvest constraints identified and market development potential assessed.

Existing IPM decision support tools adapted and an early-warning system created for postharvest pests and diseases; disseminated through Client Information Services.

Option: PhLab upgraded to conduct pesticide residue and toxin analyses (possibly funded by Danida country programme).

Project objectives - Benin

Local information collected, synthesized and made accessible through Client Information Services: as above.

Mycotoxin problems in maize assessed and handling recommendations developed (partly funded by Danida PADSA).

Option: The laboratory at Dept. de Nutrition et Sciences Alimentaires, Université Nationale du Bénin (supported by related ENRECA project) upgraded to conduct pesticide residue analyses (possibly funded by Danida country programme).

Project objectives - Ghana

Local information collected, synthesized and made accessible through Client Information Services: as above.

Models developed and management guidelines derived, for microclimate during storage, to prevent pest problems.

Option: The mycotoxin laboratory at Food Research Institute (supported by related ENRECA project) upgraded to conduct pesticide residue analyses (possibly funded by Danida country programme).

Project objectives – across borders

Collaborative sub-projects carried out in year 2 and 3 following a competitive grants scheme in year 1.

Final Phase 1 workshop held in one of the partner countries for both researchers and end-users.

Theme 3.

Precise enumeration of boundaries of target biophysical/socio-economic/developmental/cropping system recommendation domains within and beyond EPHTA benchmarks in the savanna and forest zones of West and Central Africa

3.1 A Spatial Analysis of the Impact of Market Information on Commodity Trading in Uganda

By A. Muganga¹, S. Woods², J. Chamberlin², L. You², S. Ferris¹

The main objective of this study is to measure the impact of MIS on prices in Uganda. This study will be carried out within a spatially explicit analytical framework, using geographic information system tools and the impact modeling capabilities of Dream software. Important secondary output of this study will include the ability to generate more sophisticated market information (e.g., using spatial analysis to better identify trading opportunities) and to spatially target MIS services for maximum impact.

Our approach to evaluating MIS impact is defined by the following argument: providing market information to farmers and traders encourages spatial arbitrage, a trading action that will tend to reduce price differentials by encouraging traders to buy from markets where prices are low. This will eventually increase the demand of commodities in these areas and raise prices. Increased supply to those areas where the prices are high which will lead to the decline in market prices. Coupled with the improved ability of farmers to negotiate selling prices as they are better informed about price levels and trends, the net effect of providing market information is that prices across the country will even out. This should result in the aggregate price becoming a truer reflection of the overall patterns of supply and demand and the transaction costs (primarily storage and transport) to match the two, temporally and spatially.

Given a number of assumptions, not cited, the provision of market information will not reduce the production costs but rather increase market transparency and consequently competitiveness in trade. This increased competitiveness will reduce the supernormal profits and transaction costs in the two sections of the market levels; that is between Kampala and the district prices and between the farmgate prices and wholesale prices within each district, see **Figure 1**. The net effect of this is reflected in **Figure 2** and results into reduction in prices at wholesale level and increase in farmgate prices for farmers.

The diagram illustrates the relationship between prices and costs for different types of transactions. It features a vertical axis with three main points marked by 'X' and labeled with prices: P_{w_k} at the top, P_{w_r} in the middle, and P_f at the bottom. Brackets on the left side group the components associated with each price level:

- Supernormal Profits:** Indicated by a bracket between P_{w_k} and P_{w_r} .
- Transaction Costs:** Indicated by a bracket between P_{w_r} and P_f .
- Production Costs:** Indicated by a bracket below P_f .

Horizontal lines extend from the price points to the right. A thick horizontal line is positioned at the level of P_{w_r} , and a thinner horizontal line is positioned at the level of P_f . Text labels on the right side of the diagram provide context:

- Between Kampala and districts:** Located above the thick horizontal line.
- Within districts:** Located below the thin horizontal line.

P_{wk} is the wholesale price in Kampala

D_w is the demand at wholesale level

S_w is the supply at wholesale level before market information

P_f^1 is the price farmers obtain because they have access to MI, which improves their bargaining power and knowledge of the market.

S_w^1 is the induced increase in supply due to reduction in supernormal profits because the market is now competitive

P_w^1 is the reduced wholesale price due to the reduction in transaction costs and supernormal profits

D_f^1 is the increase in implicit demand generated at the farm due to higher prices at farmgate level

A and B are new equilibriums.

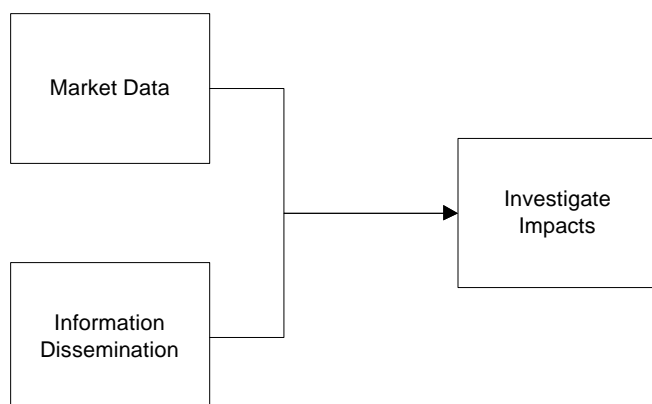
This movement shows that provision of MI reduces the excessive price difference between two markets, i.e. P_w^1 and P_f^1

This is a benefit to consumers in that they pay a lower price for the commodities and a benefit to producers in the sense that they obtain higher farmgate prices.

b. Spatial Analysis (GIS data and models)

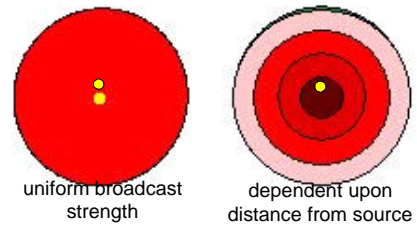
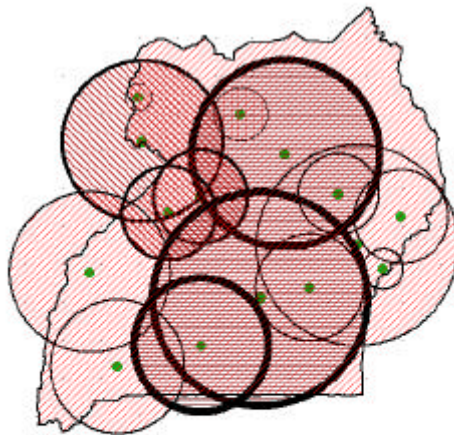
The spatial analysis framework for addressing Market Information Service impacts is presented in Figure 3 below.

Figure 3: Spatial analysis of MIS impacts on trading activity







The approach for the spatial integration of the data will be to take spatially explicit market data from the regional markets and compare it to a model of information dissemination fluidity or strength. Data sets will include commodity prices, MIS radio broadcasts and ancillary data useful in modeling its effectiveness for market information dissemination. The inputs to this model include radio transmitter locations, radio transmitter signal strength, popularity of program, signal distance from source, language of broadcast, major languages spoken in district, population, and agricultural lands. Mapped examples of the inputs to this model are presented in appendices 1 through 5. The evaluating impact assessment will be done using the DREAM. How the MIS approaches the organization of geospatial data is applicable not only to this study, but also is a useful step toward building its capacity for spatial analysis in the long term. Building on an assessment of the impact of market information on commodity trading, the spatial analytical tools and data used in this project can be used for other applications such as identifying better trader opportunities and developing better MIS's that can be replicated in the East African Region.

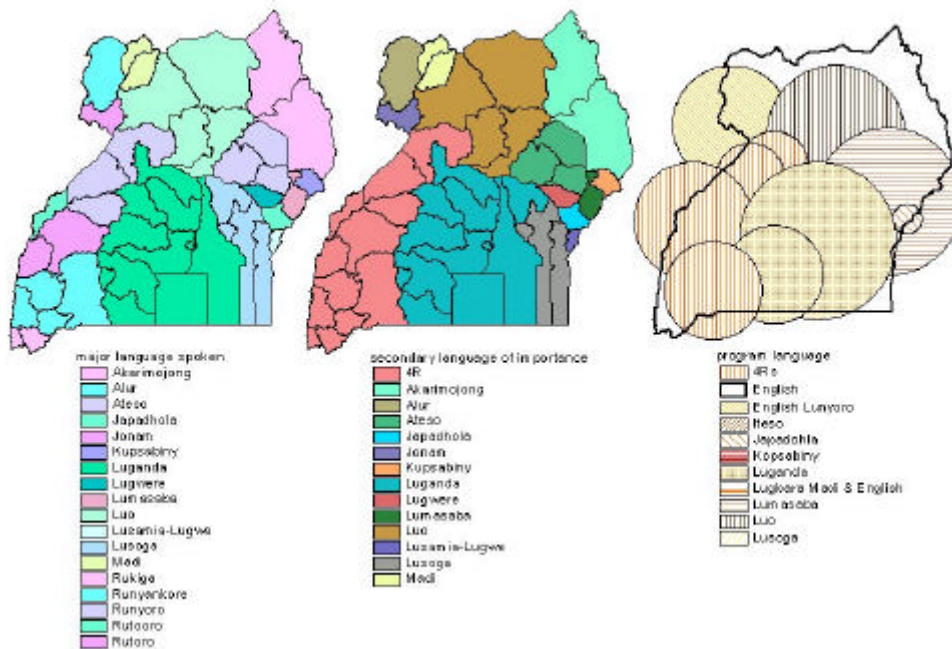
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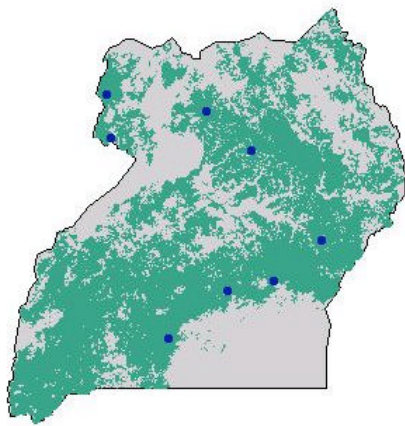
Importance of Radio Program
Ranking (1-10)

	3-4
	5-7
	8-9
	10

language concordance:

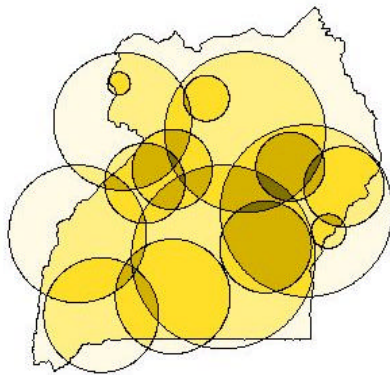


population within agricultural areas:



Agricultural land
Non-agricultural land

overlapping coverage:



1
2
3
4
5

3.2 The Impact of Globalisation on the Agricultural Sectors of East African Countries

By Peter Robbins and S. Ferris
CMIS, IITA

This project is being undertaken to evaluate the effects of global market reforms on the policies and research priority setting criteria being used to develop agricultural strategies and research agendas in Eastern and Central Africa. Recent changes in world trade agreements are having dramatic effects on the economies of many developing countries, particularly those in Africa and no single other event in the agricultural sector is catalysing such rapid levels of change. A critical aspect in this rapidly changing environment is to be well enough informed to make rational decisions on future investment in the agricultural sector and also to be in a position to negotiate in areas that may provide improved trading and hence marketing conditions for local producers, processors and traders. Despite the continued message from the WTO for increased liberalisation, transparency competition, it is still the case that agricultural subsidies to the agricultural sector in industrialised countries is approximately 1 Billion US dollars per day. In contrast, most countries in Africa, are unable to find the means to provide even the most basic marketing support services for their sectors and are facing the prospects of declining income from traditional export crops and increasing competition from countries with similar climates and economic capacity.

The term globalisation is used to describe the increasing interdependency of countries. Nowhere is this process more obvious than in the trend towards more liberalised international trade. The reduction in trade barriers has been of great benefit to those countries with established or emerging manufacturing and service sectors. Some countries with efficient agricultural sectors have also benefited from a reduction of import tariffs and agricultural subsidies in the main consuming markets. Many developing countries, including East African countries dependent on agriculture are, however, experiencing difficulties associated with increased liberalisation of international markets in agricultural produce.

East African countries find it difficult to compete with more efficient agricultural producers and are suffering surges in imported products which compete with domestic production. At the same time, the expected improvement in exports of these products has not materialised. This may be due, in part, to the difficulties of complying with the high quality standards required by many importing countries. The international market prices for almost all agricultural commodities have fallen to their lowest levels (in real terms) in living memory. This is due to gross over-production encouraged by the export-orientated economic policies of competing producing countries.

The cut in agricultural subsidies has reduced surplus stocks of food in the world which has had the effect of reducing supplies available for food aid. The process of globalisation not only affects different countries in different ways it also has varying affects on different communities within countries. Communities of small-scale agriculturalists are especially vulnerable to changes in production systems. The trend towards larger farms and plantations in the name of efficiency has marginalised many rural groups thus adding to the problem of urbanisation and cultural disintegration.

Responding to change. How should governments, development agencies and agricultural research organisations respond to these dramatic changes? How can East African countries maximise the benefits offered by liberalised global markets while ensuring food security and

maintaining the welfare of their rural communities? The first step must be to understand the many ways in which the trend towards liberalised global markets affects different countries, different agricultural sectors and different communities within the population – producers, consumers, traders, processors, input suppliers, rural, urban, exporters, small-scale traditional and modern agro-industry. An analysis of the impact of globalisation has to take place before policy options for government and other institutions concerned with agriculture can be formulated. This study is being developed in three parts.

A short history of globalisation
Agricultural profile of countries in the region –
Implications for policy changes –

3.2.1 A Short history of African trade

Early trade and colonialism East Africa has a tradition of trade, especially with the Arabian peninsular and Southern Asia, going back several thousand years. Arab merchants developed trading links with many African kingdoms and established settlements on the coast before the 8th century AD. Trade routes were established into the interior of the continent to transport commodities such as ivory, gold, furs and gums to the coast and Asian food products such as bananas and coconuts were introduced.

European colonisation began in the 15th Century. The Portuguese charted the coastline and developed natural harbours for use in their trade with the East and they too began trading in African goods. The Portuguese were followed by the French, Dutch and British and later by the Germans and Italians. Each colonial power began to explore further into the interior and to subdue the indigenous populations. The British, especially, recognised the potential for agriculture in the region and established plantations and farms. Large areas were colonised and territorial borders delineated. Cotton was produced as well as food crops and livestock. Local African agriculture was transformed with the introduction of crops from other parts of the world, notably those originating in the Americas such as the sweet potatoes, potatoes, maize, cassava, peppers, tomatoes, papaya, jackfruit, cocoa, passion fruit, pineapple, sisal, cashew nuts, sunflower, groundnuts and tobacco.

In the late 19th century the first railways were driven deep into central Africa. In certain instances workers were transported to Africa especially from the Indian sub-continent to work in the plantations and as labourers to build roads and railways. Indians with an entrepreneurial background were able to establish businesses that grew to represent a significant proportion of trading activity in some countries.

Europe's main commercial interest in East Africa was its raw materials – minerals and agricultural products. The present transport system reflects those interests. Railways and major roads were designed to carry products from the interior to the coast, not to encourage or facilitate trade within the region. Borders between countries are largely arbitrary, from an African point of view, and they often cut across the territory of populations with a common language and culture.

European companies dominated import/export trade in African products often holding a monopoly in specific commodities. Many of these companies not only organised the production of these commodities but also transported them and processed them locally or, more often, in their home country. Some, like the giant chocolate, tea, sugar, tobacco and coffee companies, also marketed the finished product. In order to protect these monopolies trade barriers had to be erected between African countries colonised by different colonial powers. At times countries of

the region were officially at war with each other as the French fought the English, the English fought the Germans, and so on. This was hardly a conducive environment to stimulate regional trade.

As urban populations grew and the number of plantation workers increased, the Europeans found it necessary to organise the distribution of food through governmental structures and to fix both purchasing and retail prices.

Independence. The process of de-colonialisation began after World War II and most African countries gained their independence in the 1950's and 1960s. African governments generally retained the marketing structures and trade barriers bequeathed to them by the colonial regime but they benefited from the relatively high commodity prices at the time. Some commodities, such as coffee, cocoa and rubber, were the subject of International Commodity Agreements which maintained prices at a level agreed by producing and consuming countries. Some African countries experimented with collectivised production as a means of improving the economies of scale and others concentrated on self-sufficiency and import substitution. Many large commercial farms and plantations were retained and expanded.

In the post World War II period, European countries embarked on programmes to develop their own agricultural sectors, partly in response to their experiences in the war, when large quantities of food had to be imported by sea at great cost both in money and lives. All developed countries were able to boost agricultural output through innovations in farming technology – machinery, artificial fertilisers, pesticides and new breeding techniques. Farms too became bigger and more efficiently managed. During this period developed countries also enjoyed unprecedented rates of industrial and economic growth. Trade in manufactured goods and services increased enormously. Transport systems improved by air, sea and land and communications systems were developed to facilitate trade. Trade in raw materials and agricultural products has become a relatively minor component of international commerce. Farming now represents only about two percent of total economic output in the most highly developed countries.

Traditional African farming methods do not lend themselves to efficient, large-scale production although they are efficient in terms of the use of machinery and chemicals. Farming also represents by far the largest employer of labour in East African countries.

Development strategies. The lack of development in African countries has caused their economies to fall further and further behind those of the leading industrial nations. Many different agricultural development strategies have been tried. African countries have encouraged investment in tourism and industry. In agriculture, producers were encouraged to move away from subsistence farming towards a more commercial approach. Governments realised that income generated from the sale of surplus production could be used to improve productivity.

Agricultural development in East Africa has faced an uphill struggle for the last twenty years. In an effort to stimulate development many countries borrowed heavily from bodies such as the IMF and from the commercial banking sector. These loans were not granted without strings attached, however. Most African countries were obliged to adopt significant changes in economic policy often applied in packages known as Structural Adjustment Programmes (SAPs). These programmes included a number of elements but generally included requirement to:

devalue the currency (to discourage imports and make exports more competitive),
to make the currency freely convertible with other currencies,

to cut public expenditure (in order to lower taxes),
to privatise state-owned industries (to raise capital),
to cut import restrictions (to encourage local industries to become more efficient),
to allow foreign companies to freely repatriate profits,
and to boost exports.

The economists who designed SAPs were convinced that the only way African countries could transform their economies was to encourage inward investment and earn foreign exchange to invest in infrastructure and lay the foundations for industrialisation.

These measures assumed that any country could compete in the world market if it concentrated production and investment in areas where they were deemed to have a competitive advantage. The only activity in which East African nations could be said to have a competitive advantage in the world market was in the production of tropical agricultural products and the exploitation of natural resources such as forestry, fishing and mining. The major flaw in this strategy was that similar advice was given to almost all tropical countries at the same time. Coffee-producing countries were encouraged to boost coffee production; sugar producers should produce more sugar, and so on. This resulted in chronic over-production of these commodities causing prices to plunge in the international markets. On average, today's prices of tropical products (taking dollar inflation into account) are only about one seventh of those prevailing in 1980. Economists call this phenomenon the fallacy of composition - less income is earned as more commodities are produced.

Another component of SAPs which many observers believe to have been counter-productive was the requirement to cut public expenditure. All too often this meant a cut in health programmes, education and agricultural extension. These measures have tended to reduce, rather than enhance the flexibility of the workforce and to curtail agricultural development.

Overall, the record of inward investment has been poor and the ending of currency controls has increased opportunities for transfer pricing abuse (where companies over-price imports and under-price exports to reduce tax liability).

The most important SAP reform affecting the distribution of agricultural products has been the dismantling of state-controlled marketing boards and fixed purchasing and sales prices for commodities. It was assumed that government control of markets had obscured the forces of competition in supply and demand in the economy. A free market system would unleash these forces and increase productivity. It would force producers to meet the demands of consumers both in price and quality. Farmers could buy inputs cheaper from competing suppliers and the country, as a whole, would become more competitive in world markets.

Unfortunately, competitive and transparent markets did not suddenly emerge spontaneously from the ether. Most African farmers have too little land to produce truck-loads of goods and they are widely dispersed over the countryside. There is not enough business to encourage more than one trader to operate in many areas. Farmers have no means of communicating with the outside world or even the nearest town and they are often unwilling to risk the investment of bringing their goods to market resulting in considerable waste. Laws may be passed which ban collusion among traders to pay low prices to farmers and charge high prices to consumers but there are often insufficient resources to police such laws. Most traders have no experience of free market conditions and are reluctant to put their fellow traders out of business with cut-throat competition.

Advocates of SAPs point to examples of countries that have improved their economies after adopting SAPs but there are very few in Africa. In many African countries rates of poverty have increased. Poverty and political destabilisation go hand in hand. Colonial wars, civil war and deliberate attempts by Rhodesia and South Africa to destabilise governments have further weakened economic development in East Africa. Adverse climatic conditions and now HIV/AIDS add dramatically to the problem. Most critics of the reform process acknowledge that markets in African countries must be made more competitive and SAPs are designed to do that but this process may take a considerable time. As the economist John Maynard Keynes once said – ‘In the long-term we are all dead.’

Trade agreements. Economic links between East African countries and their former colonial rulers have been maintained since independence. The economies of these countries have been moulded to meet the needs of their European counterpart for a hundred years or more and it would have been difficult for them to make the necessary changes in production patterns to trade successfully with other countries. The Europeans too needed to maintain supplies and export markets in Africa and to protect the business of their trading companies. In 1975 all ten countries covered by this study became party to the Lomé Convention. The Convention established trade, aid and cultural relationships between 15 European countries and 71 so called ACP (African, Caribbean and Pacific) countries which had either been colonies or had had strong historical links with Europe. This agreement did not rule out bilateral or multilateral agreements with other countries but did give ACP countries preferential access to European markets. East African countries have also decided to try to stimulate regional trade by bringing their economies closer together in regional economic agreements such as ECOWAS, SADC.

From this short history it can be seen that East African trading links with many countries is nothing new. East Africans have exchanged goods and ideas with many other peoples of the world for millennia. In these exchanges of goods, cultural links have been established which have influenced East African life at all levels – in religion, the arts, government systems, the economy and agriculture. In the last decade or two, however, this process has accelerated tremendously.

There is no agreed definition of globalisation. It is simply a term which has been used recently to describe the impact of innovations in communication and transport systems on trade and the growing interdependence of nations due to economic sophistication and burgeoning output. In addition, highly protected trading blocks of countries are breaking down as barriers to trade are reduced. These changes have made it possible to increase the volume of trade between countries in agricultural products.

The most active trading nations have been keen to find new markets for their goods and to reduce the barriers to free trade. At the same time they have been reluctant to expose their own markets to foreign competition, especially unfair competition from subsidised or sub-standard goods. It became clear that overall levels of trade could be increased if trade barriers were reduced where there was agreement to do so and that international trade should be governed by mutually agreed rules.

At the international level this process began with the General Agreement on Tariffs and Trade (GATT) which was first implemented in 1948 as a mechanism to promote free and fair trade among member countries. Several rounds of negotiations of trade rules have occurred throughout the history of GATT. The Uruguay Round, which began in 1986, was the eighth of the GATT

rounds. In April 1994, officials from more than 100 countries gathered in Marrakech, Morocco to sign the Uruguay Agreement and to confer the role of further trade reforms on the World Trade Organisation.

The reform process is by no means complete. Almost all countries have now committed themselves to the objectives associated with their membership of the WTO. (6 out of the 10 countries covered in this study are WTO members). In order to meet these objectives, countries are obliged to further reform their existing internal economic and external trade policies.

The future of trade and agriculture in East Africa is inextricably linked to the rate and direction of these reforms.

Reforming the rules governing international trade. The past twenty years have been marked by an accelerating trend towards the liberalisation of economies and trade. At the international level this process began with the General Agreement on Tariffs and Trade (GATT) which was first implemented in 1948 as a mechanism to promote free and fair trade among member countries. Several rounds of negotiations of trade rules have occurred throughout the history of GATT. The Uruguay Round, which began in 1986, was the eighth of the GATT rounds. In April 1994, officials from more than 100 countries gathered in Marrakech, Morocco to sign the Uruguay Agreement and to confer the role of further trade reforms on the World Trade

Organisation. The WTO Agreement on Agriculture
International rules governing trade in agricultural products are embodied in the WTO Agreement on Agriculture (AoA).

The AoA, which came into effect 1st July 1995, covers agricultural produce but excludes fish and fish products and forest products (e.g. timber). The implementation period of the Agreement was six years (commencing 1st Jan 1995) for developed countries and ten years for developing countries. WTO members have agreed to continue the process of trade liberalisation in agricultural products beyond this period and are in the process of reviewing the Agreement.

The three main objectives of the Agreement are:-

- To increase market access
- To increase export competition
- To reduce domestic support

The assumption behind these objectives is that if protective measures, such as subsidies, tariffs and quotas, which distort the international market for agricultural products, are removed, production will become more efficient and producers with a competitive advantage will gain the highest market share.

In theory, many African countries have a competitive advantage in the production of certain agricultural products. Wages are low and a variety of soils, topography and climatic conditions favour the production of many crops. Competitive production, however, also requires investment, know-how and efficient transport systems. And, except for some specialist products, only larger production units offer the economy of scale needed to compete successfully.

The AoA commits members to convert non-tariff import restrictions (quotas, variable levies, etc.) on agricultural produce into equivalent tariff barriers (i.e. the new tariff would have the

same effect of restricting imports as the old non-tariff barrier). These tariffs, once fixed, cannot be increased.

Developed country members are committed to -
reduce import tariffs over the period of the Agreement by an average 36% and a minimum of 15% for any one imported category of product.
reduce outlays on export subsidies by 36%.
reduce the volume of subsidised exports by 21%.
reduce domestic farm support (AMS*) by 20% except for 'green box' measures (see below).
allow a minimum access (imports) of the equivalent of 5% of domestic consumption on certain categories of product. This does not commit a country to actually import these quantities but simply provide the opportunity for such quantities to be imported.
Developing country members are committed to –
reduce import tariffs over the period of the Agreement by an average 24% and a minimum of 10% for any one imported category of product.
reduce outlays on export subsidies by 24%.
reduce the volume of subsidised exports by 14%.
reduce domestic farm support (AMS) by 13.3% except for 'green box' measures.
allow a minimum access (imports) of 1% rising to 4% by 2004 of domestic consumption on certain categories of product.

Least Developed Country members are committed to bind (fix) their import tariff rates and provide minimum access quotas but are exempt from any reduction commitments. LDCs and developing countries with a per capita income of less than \$1000 are exempted from eliminating export subsidies but import substitution subsidies must be eliminated by 2002.

Exceptions The Agreement contains many qualifications and exceptions.

On tariffication -- in some circumstances countries are able to use the Special Safeguard Provision of the Agreement. This provision is designed to protect the products that were subject to tariffication from surges in imports or large price falls when countries are allowed to impose additional duties.

Some countries are covered by a Special Treatment Clause (often known as the Rice Clause) covering specific commodities. This clause only applies to South Korea, the Philippines and Japan who wished to protect the farmers of their staple food (rice), and Israel who wished to protect certain livestock products.

On Domestic Support –Domestic support takes the form of monetary sums given by governments to farmers to subsidise production of specific products or more general expenditure on infrastructure, research, etc.

- The Agreement recognises some categories of support to be 'non-trade-distorting' and some that are not, or minimally trade-distorting.

These are –

'Green box' supports that are deemed to be minimally trade-distorting and are not subject to reduction commitments. They cover research, extension, food security stocks, disaster payments, anti-narcotic incentives and structural adjustment programmes. Green box measures

can be challenged by countries who can prove injury to their own economies after the Due Restraint Provision (known as the Peace Clause) of the Agreement lapses in 2003.

‘Blue box’ supports are a special category created to accommodate the EU’s and US’ system of augmenting farmers income for reducing production or only maintaining levels of production at an agreed level. They include the EU’s ‘set aside’ programmes and US deficiency payments. These are also not subject to reduction under the terms of the Agreement.

‘Amber box’ supports are payments made directly to farmers for each unit of output and, as they are deemed to be trade-distorting, they are subject to reduction.

- De minimis clause – This clause allows countries to maintain a certain minimum level of support to farmers. In the case of developed countries this can be up to 5% of the value of production for individual products and 5% of total agricultural production. For Developing countries, support can be given up to a level amounting to 10% of the value of total agricultural output.

- Special and differential treatment – allows developing countries to provide input and investment subsidies.

On Export subsidies- Export subsidies are payments made by governments to producers or exporters to enable them to sell goods abroad at cheaper levels than they could otherwise afford. When such sales of manufactured goods are made at below their cost price, it is known as ‘dumping’ and the practice is prohibited. Agricultural products are regularly sold abroad (almost exclusively by industrialised countries) below cost price but it is neither described in the Agreement as dumping nor prohibited. The practice is, of course, beneficial to consumers of such products but cheap, subsidised imports compete with domestically produced products and drive prices down for domestic producers. EU and US export subsidies take several forms including export credit. Both are compatible with the WTO Agreement on Agriculture but are again subject to the agreed reductions.

The Future of the AoA The WTO has a wide remit to maintain, regulate and continue the reform of rules governing international trade in manufactured goods, services and raw materials. In order to carry out this remit, agreement must be reached by all member countries on the components of the infrastructure of the trading system and on the conditions of production including intellectual property rights, the impact of production on the environment, labour conditions, etc.

The difficulties of reaching agreement between over 150 countries on all these aspects of trade are enormous. Agreement has been reached in the past through compromise and ‘trade-offs’ between countries where, for instance, one country will relax access to its market for manufactured items in return for recognition of its intellectual property rights by other countries.

On Friday 3rd December 1999 the Third Ministerial Conference of the WTO, held in Seattle USA, collapsed in bitter disagreement. The main issues of contention were that many developing countries felt that their concerns were not being properly addressed and that they were not properly included in the decision-making mechanisms of the organisation. In addition, many countries were not prepared to agree further reforms before the impact of existing reforms had been assessed. Some developed countries also disagreed with each other over the level and type of protection used to safeguard their various industries.

Agriculture forms part of the fixed agenda of the WTO and negotiations on this sector have been held regularly at the WTO since the collapse of the Seattle meeting. These negotiations have been divided into two phases. The first phase was designed to review the AoA, to accept proposals from members on their ideas for further reforms and to agree an agenda for the second phase of negotiations where agreements on further reforms can be reached. Some observers have expressed doubt that agreement on agriculture alone can be achieved without the 'trade-offs' which could be offered in a new Round of agreement covering all aspects of trade. The first phase of the negotiations on further reforms of the WTO AoA was completed 27th March 2001. The 125 member countries participating in the talks agreed a work programme for the second phase.

The second phase of the negotiations is scheduled to take place in a number of AoA Committee meetings and informal Special Sessions in September and December 2001 and March 2002 followed by three more Special Sessions in May and July 2002 and February 2003. The programme includes in-depth work on policy options based on members proposals and Special and Differential Treatment for developing countries.

The first two or three meetings will discuss –
Tariffs and tariff quota administration Export restriction
Amber box issues Food security
Export subsidies and export credits Food safety
State trading enterprises Rural development

The Lomé Convention and the Cotonou Agreement. The Lomé Convention established trade, aid and cultural relationships between 15 European countries and 71 ACP countries (including the ten countries which are the subject of this study). The Convention came into force in 1975 and was reviewed and amended four times to take account of changing trade and aid patterns.

In essence, the Convention gave ACP countries preferential access to the EU market and acknowledged the obligations that flowed from the previous colonial relationship. The most important benefits conferred by the Convention to many ACP countries was access to the EU market on very favourable terms for large but quota-limited quantities of beef, sugar, bananas and rum under the various protocols of the agreement.

In December 1999 the 3rd negotiating session of the ACP Council of Ministers agreed details of a successor to the Lomé Convention – The Cotonou Agreement. Most signatories to Lomé, including the EU countries, had become members of the WTO and, as a condition of their WTO membership, they were obliged to make this new agreement in order to ensure that EU/ACP trade arrangements complied with their WTO rules.

The WTO recognised that compliance could not be achieved immediately and allowed for the non-WTO-compatible features of the trade aspects of the new agreement to be turned into compatible arrangements by not later than 2008. Before 2008 EU and ACP countries will, therefore, have to amend their economic relationship with each other again in two important ways. They must make their trading relationships reciprocal (equal access to each others markets) and they must not discriminate against other countries at a similar level of development.

The Cotonou Agreement provided a new and improved package of EU assistance to ACP countries in the form of grants, loans and guarantees but ended some Lomé benefits including the rum and banana protocols. The agreement allowed for assistance to be channelled through ‘other actors’, i.e. non-governmental agencies including the private sector, NGOs and groups representing elements of civil society. The agreement also stipulates that by 2005 the bulk of products from least developed countries can be imported into the EU free of duty.

The Agreement suggests that compatibility with WTO regulations could be achieved through regional trade agreements (RTAs) but recognises that some ACP countries will be unable to establish such arrangements. The period up until 2008 will be used to try to get agreements for RTAs but also to explore other possible WTO-compatible ideas. Whatever the outcome, it has been agreed that any new arrangement will be equivalent to Lomé provisions.

3.2.2 A Short History of Agricultural Liberalisation

Farm-gate prices and liberalisation

The devaluation of local currencies represented one of the most important ingredient of Structural Adjustment Programmes (SAP). It was thought that devaluation would increase the income measured in local currency to farmers who exported their products. The reasoning was that, if export sales of the farmers’ products were made, say, in dollars, those dollars would equate to a larger sum of local currency than before devaluation.

Another SAP measure required governments to dismantle centralised, state-controlled commodity marketing boards. It was thought that the transfer of marketing activity to several companies in the private sector would allow competition in the market which would ensure higher sales prices to the farmer and lower wholesale and retail prices.

There is mixed evidence on the outcome of these measures. Some merchants failed to pass on the to the farmer the increased local currency revenue from export sales. In some areas traders failed to compete for farmers’ supplies and, instead, colluded with each other to keep farm-gate prices down. There is evidence to show that farmers are paid more quickly than under the state monopoly system, however.

Deregulation has tended to put more export business in certain commodities in the hands of, often, a very few foreign-owned companies whereas local trading companies have evolved to be less specialist.

Processing

Typically, milling and hulling of grains and rice were undertaken by state-controlled enterprises prior to liberalisation. The reform measures increased the number of privately owned millers with a better geographical spread throughout the country. This has had the effect of lowering costs but the smaller millers are constrained by lack of capital.

Coffee and cocoa generally receive very little processing in Africa apart from drying, washing, pulping and curing. Some investment has been made in plant to roast coffee (Uganda), produce instant coffee (West Africa), and confectionery but only for domestic outlets.

Almost all cotton is exported from Sub-Saharan African countries as lint (cotton after ginning) which is cheaper to transport than more highly processed products. By 1997 Tanzania had 27 private ginneries supported by multilateral donors. Unfortunately, these small companies sourced their raw material from a wide catchment area and purchased different cultivars indiscriminately.

This resulted in a supply of mixed seed from the ginnery and a consequent poor quality cotton grown from that seed.

The canning of fruit and vegetables in Africa is carried out almost exclusively in South Africa and Kenya. Some European supermarket chains, however, are promoting local African washing, packaging, bar-coding and also sometimes, cutting and pre-cooking. This means that production has moved away from small-holdings to larger farms which can ensure better quality control. The added value is, therefore, captured by only a few companies usually foreign or racial minority –owned. Most foreign investment has gone to the processing of export crops because such investment can be financed more easily from bilateral and multilateral donors and by commercial loans.

Liberalisation has not had the effect of increasing quality generally. The old marketing boards were in a better position to ensure quality standards.

Input supply

Deregulation and devaluation has resulted in a lowering of the use of agricultural inputs. Prior to the implementation of liberalisation measures, many African countries subsidised the supply of inputs in one way or another and although this policy was often carried out inefficiently it did, at least, ensure the uptake of these inputs by many small-scale farmers. Input supplies were regarded as an aspect of agricultural extension but this system requires the distributing organisation to have a monopoly of the marketing of produce in order for it to recover costs. Under this previous system larger farmers received a disproportionately large share of the available supplies in some cases.

A variation of this policy has been tried again recently (1998/99) in Uganda where 34 private cotton buyers received a government loan to supply inputs but without such assistance the private sector finds it difficult to obtain credit for supplies and to recover payment from recipients. Since the abolition of transport-equalisation subsidies operated by several African governments the supply of inputs to remote areas has dwindled significantly.

Some organisations have stimulated the use of trust funds to finance input supplies. In these arrangements a revolving fund is made available by traders, local government and the farmers themselves. The success of these schemes is closely linked to the quality and accountability of the fund managers. They work best when adopted by pre-existing groups where social pressure ensures repayment.

Micro-credit schemes have also been utilised for input supply. The cost of administering these schemes often renders them sub-commercial, however, and some donors apply 'no subsidy conditionality' to loans which restricts their use for this purpose.

Seeds

Within most Structural Adjustment Programmes most governments decided to withdraw from the multiplication and distribution of seeds but retained a regulatory and, sometimes, a research role. Production and distribution of seeds has been taken over by large, multinational seed suppliers or by consortia of multi-nationals and local companies in many African countries. These new arrangements tend to favour the most profitable areas of the market where large quantities of a single variety of seeds can be supplied to larger farms. Seed supply has, therefore, become more efficient at the wholesale level but not at the level of the small-scale farm.

Supplying seeds to small-scale farmers is fraught with difficulties. Small quantities of different varieties are required to meet the individual farmer's needs. This involves complicated inventory problems, considerable transport costs and wastage. There are few suppliers of the less profitable seeds types of non-hybrid maize, millet, pulses, sorghum, oilseeds and potatoes. Prices for seeds have tripled since liberalisation. There are now many more distributors but this has made it more difficult to control quality. In Tanzania, Danida the Danish development agency, is supporting 100 village-based seed production units to try to overcome these problems.

Extension

In the years since liberalisation centralised extension and research has become increasingly donor-dependent but overall funding has fallen and many organisations are seriously under-funded. Most donor funding programmes are devoted to training, technical assistance and capital investment and there is less money available to cover operational funds for research.

Many research and extension services have been criticised for poor management and a lack of relevance of their work. Many are over-staffed but offering such poor wages that staff are tempted to use their position for personal gain. There are many instances of a poor interface between extension, research and the farmers' needs.

In general, there is little agreement about where the greater public interest in these services should end and where the private-sector interest should begin. Many have undergone a core functions analysis funded by the World Bank Agricultural Services and Management Project but these have had a limited effect. As farmers are under increasing pressure to increase marketed production they need increasingly diverse, dynamic and appropriate technical assistance rather than one-package-fits-all solutions.

Agricultural Infrastructure

Agricultural Infrastructure includes roads, railways, ports, water, electricity, telecommunications, and post harvest facilities. Funding for infrastructure provision is not seen to be the main problem. The bottleneck most commonly identified is poor administration and the reluctance of governments to invest in rural areas especially in maintenance and operations. East Africa does not have an elaborate railway network but those services that do exist are poorly run and lack investment. The trucking industry has grown but the lack of adequate rural transport systems is a major constraint on agricultural development. Traders are often the only owners of trucks in these areas which strengthens their market power over farmers.

Marketing infrastructure

Marketing infrastructure includes the provision of market information, market research, communication systems, fixed-site market places, credit and the proper regulation of a legal framework outlawing monopolies, oligopolies, cartels and trading collusion. State-controlled marketing boards prior to liberalisation monopolised the purchasing of a number of commodities from farmers. The boards would regularly set prices, hold stocks and distribute the products at home and abroad.

Markets in perishable food products, such as fruit and vegetables, were not usually controlled by the boards. In Africa, the main consumers of agricultural goods are farmers and their families but marketing boards were only interested in surplus production. In addition, the boards were not involved in barter arrangements and local sales at the village level although prices at that level were greatly influenced by the boards' price-setting.

Although most marketing boards have been dismantled in the liberalisation process, several still exist in some African countries and deal, especially, with the most important export commodities and with strategically important food products. Other boards have changed their function and deal, typically, with the regulation of the market.

The function of the dismantled marketing boards has been taken over by many layers of private traders of different sizes and function. It was hoped that transparent and competitive markets would rapidly evolve. In many countries, however, traders have been slow to embrace the competitive system and collude with each other to fix both farm-gate and retail prices. The forces of competition manifest themselves mostly at the wholesale level.

Smaller-scale traders face many problems including transport difficulties in the rural areas, poor and mixed quality supplies in often small quantities, lack of credit, lack of up-to-date market information, arbitrary road tolls, variable quantity units and poor facilities at fixed-site market places, such as storage and drying floors, resulting in wastage. In these conditions it is not, perhaps, surprising that traders collude with each other especially in areas where farmers are thinly dispersed over wide areas.

Many farmers are in an even more difficult position. They often have no transport, no storage facilities, no credit and no means to discover the prevailing market price for their goods. They are in a weak bargaining position compared with the trader.

Some of the farmers' problems have been addressed in some areas by adopting collective activity especially in raising credit, storage, transport, sorting, grading and marketing. In this way, traditional, small-scale farms can gain economies of scale and legal status enabling them to compete with commercial farms.

Farmers' co-operatives and associations are common and popular in many parts of the world including Europe and Latin America. The historical experience of co-operativisation in many African countries has not been positive, however. There is ample evidence of co-operative management being weak and even corrupt especially where co-operativisation has been imposed on farmer groups. Although the benefits of collective activity are obvious, the historical legacy of negative experience with co-operatives has made many farmers wary of adopting these activities. There are, however, many successful examples of co-operation among African farmers. These tend to be among farmers involved in specific crop sectors (tomato growers in Ghana, for instance) and in pre-existing groups bound together by kinship, religion, language, etc. where the group, itself, has proposed collective activity.

Most successful farmers associations have received support from development agencies in the form of management and business training, advice on the mechanisms of democratic decision-making, the pump-priming of credit unions and, in some cases, the provision of equipment such as computers and communication systems.

The record of credit provision to small-scale agriculture is very poor. Farmers often have no collateral and no experience of keeping proper records. Many of those banks that have received funding from donors to provide small-scale agricultural credit have misappropriated funds and have gone into liquidation taking farmers' savings with them. Poor, isolated, atomised farmers have virtually no chance of obtaining credit except on usurious terms from traders. The formation of some form of legal entity representing many farmers has enabled such farmers to obtain credit

which can be used to hold back stocks where traders are unwilling to pay prevailing market prices thus strengthening farmers' bargaining power.

The history of the provision of market information to farmers in the post-liberalisation period has been equally poor. It was recognised at the early stages of the reform process that a free market in agricultural goods could not function successfully unless all actors in the market were properly informed about price movements and market conditions. Most African governments, supported by donors, established market information services disseminating information by state-owned radio broadcasts and through the printed media. Almost all these services failed to deliver appropriate and timely market information to ordinary farmers, traders and processors but sometimes provided useful information to government agencies and very large actors in the private sector. Many donors withdrew support.

The advent of the Internet, mobile phone systems and local FM radio stations broadcasting in the local vernacular has now made it possible to adopt new models for locally-based, participatory, timely, demand-led and cost effective market information services which can be linked to national, regional and international information networks.

Theme 4. Enhanced impact of research investment by IITA and partners and quantified evidence of adoption of improved technologies on rural livelihoods and the environment

4.1 Impact evaluation of cassava based research with a focus on small-scale processing technologies and pilot sites in Uganda and Tanzania and market information.

By S. Wood^{\$}, L. You, B. Douthwaite⁺, J. Whyte⁺, A. Muganga and R.S.B. Ferris⁺

⁺ International Institute of Tropical Agriculture

⁺ International Food Policy Research Institute, under the auspices of ASARECA

The DREAM impact model was used to test the benefits derived from the Uganda PL-480 cassava project in six districts of Uganda. This analysis shows that for an investment of 0.8 million US dollars to the IITA Uganda rehabilitation project, the total benefit over the past 4 years (1998-2001) is approximately US\$36 million.

Region	Producer Benefit	Consumer Benefit	Government Revenue (1000US\$)	Total Benefit	Cost	Benefit - Cost	Benefit /Cost	IRR (%)
Iganga	6,538	7,631	0	14,169	0	14,169	---	---
Kamulli	413	4,162	0	4,575	129	4,446	35.33	---
Luwero	1,561	710	0	2,271	129	2,141	17.53	---
Masindi	-841	1,159	0	319	129	189	2.46	105.50%
Mpigi	2,918	2,803	0	5,722	129	5,592	44.19	---
Mukono	5,775	3,129	0	8,904	129	8,775	68.77	---
Sum	16,365	19,594	0	35,959	647	35,312		

4.2 Demonstration of cassava processing equipment and linkage with micro-enterprise projects in Eastern Tanzania (Foodnet grant 6)

By K. Mtunda¹, M. S. Kilima¹, S. Kolijn², J. Kwampipa¹, E. Malcho¹, S. Chambi¹ and R.S.B. Ferris²

1- Tanzanian Root Crops Programme, IITA

The purpose of the project was to introduce and promote improved cassava processing equipment at the household level for increased consumption and income through sales of value added cassava products. The processing equipment was delivered to the root / tuber programme at Kibaha in October 2000, where the equipment was tested and modified, with support from the SARRNET regional scientist. The Kalimatakijai women group received the cassava chipper in February 2001, and the Kwa Mathias women's group received their equipment in March 2001. The Kalimatakijai women group comprising 8 active members, was established in 1990. Previous activities included; Making tie and dye cloth, Preparation of Hema (Local nail vanish) and cultivation of Mushrooms. These previous activities have stopped due to greater competition from other groups in Dar es Salaam and so the group is seeking an activity whereby they have greater comparative advantage. The Kwa Mathias women group comprises 5 active members and was established in 1998. The activities commonly carried out included the growing of vegetables such as cucumber, okra sweet pepper and sweet potatoes. Training for cassava processing was conducted in February and March 2001. The topics included; how to

process high quality cassava flour, how to operate the chipper and some tips on the marketing of cassava products. In order to popularize the high quality cassava flour, the Kwa Mathias group participated in the 'World Women Day' celebrations held nationally at Kibaha. Both the cassava equipment and the products were displayed from 6th to 8th March 2001 and the group received a prize for their efforts and innovativeness of the processing.

The main challenge the groups face is their lack of ability to actively engage in market linkage. They either need to identify new marketing channels/ outlets or work within the old marketing channels. The project leaders are trying to link the groups with some entrepreneurs in Dar es Salaam and some retailers in Kariokoo Market have shown interest. Packaging of cassava flour has been highlighted as a major problem and is the next activity for the groups to address. The appropriate packaging materials have to be identified with the help of project leaders. Some customers are interested in white fermented flour. The groups are also in the process of testing the best soaking time for chips, because customers have complained about the sweet taste in flour made in one day. Later, cassava flour will be marketed in two categories; unfermented and the fermented. Through additional promotion at the "World Women Day" in Dar es Salaam, many women groups have applied for training in cassava processing and we are planning to conduct this in collaboration with SARNET in 2002.

4.3 Development of the FOODNET website

By M. Namanya, K. Muganga, G. Okoboi and R.S.B. Ferris, J. Atalobhor and P. Philpot

The FOODNET website has undergone a series of changes since being established and in this year, the design of the site has changed to provide a better understanding of the FOODNET price information system. The website is therefore developing greater capacity for provision of information as well as being used as a management tool. In 2002, the website will be more fully integrated with the FAO InPhO Website, the PhAction site will be created as part of the ongoing development of the PhAction consortium and data links will be further developed to integrate more applications for GIS linked price management and market information services.



Statistics		
Hits	Entire Site (Successful)	516,639
	Average Per Day	756
	Home Page	12,848
Page Views	Page Views (Impressions)	49,229
	Average Per Day	72
	Document Views	48,961
Visitor Sessions	Visitor Sessions	20,962
	Average Per Day	30
	Average Visitor Session Length	00:09:06
	International Visitor Sessions	13.56%
	Visitor Sessions of Unknown Origin	47.95%
	Visitor Sessions from United States	38.47%
Visitors	Unique Visitors	8,107
	Visitors Who Visited Once	6,214
	Visitors Who Visited More Than Once	1,893

4.4 Inter-centre / Inter-bilateral co-ordination of PhAction strategy and implementation

By IITA-S. Ferris, CIP-M. Herman, CIAT-R. Best, IRRI-R. Bakker, IFPRI-N. Minot, CIRAD-jean-leu.marchand, F. Troude, GTZ-C. Henckes, NRI-Guy Poulter, R. Hodges, FAO-F. Mazoud, ACIAR-G. Johnson, J. van Graver, JIRCAS-T. Toruha and ICFR-J. Heyes

PhAction, (the Global Postharvest Forum), is a consortium of 12 agencies involved in post-production research including IITA, CIP, CIAT, IRRI, IFPRI, CIRAD, GTZ, NRI, FAO, ACIAR, JIRCAS and most recently ICFR. The aim of the group is act as an advocacy organisation which is lobbying for greater investment into postharvest research and development. In 2000, the consortium was formed and in 2001, the PhAction has developed a joint strategy to foster greater collaboration between the main public sector research organizations working on postharvest issues and to develop an action plan and sub-projects which will be implemented by the partners within and in association with partners linked to PhAction.

PhAction has developed the strategy and action through a series of participatory meetings as part of the development of both strategy and project development, which occurred in:-

Hanoi, 2-4 April – hosted Vietnamese National Postharvest Programme.

Purpose: Strategy development

Montpellier 11-14 June – hosted CIRAD,

Purpose Presentation of Initiative to partners and further development of the strategy

Washington 29 Nov – 2 Dec – CGIAR AGM,

Purpose to present PhAction “Linking Farmers to Markets Initiative” to Donors Group.

4.4.1 Hanoi Meeting

Executive summary, action points and responsibilities

The process used at the Hanoi meeting was:

- a) presentation of background documents
- b) identification of some Key themes around which projects can be developed. A framework of 7 Challenge areas and 6 target markets was conceptualised. These were:

Challenge areas

Market opportunities

Postharvest handling and processing technology

Food quality, health and nutrition

Supply chain organization

Effective support services for small enterprises

Socially and environment-ally responsible business

Agricultural and rural development policy

Priority markets

Developing country low cost staples

Developing country animal feed

Developing country high added value processed products

Developed country, high added value bulk markets

Developed country, high value added, niche/alternative markets (includes medicinal plant products)

Non-food (industrial) markets

These project ideas were further consolidated to the final 4 major challenges areas:

Challenge A : Market opportunity identification, including opportunities for socially and

Challenge B: Organization of support services and supply chains and environmentally responsible business.

Challenge C: Postharvest technology.

Challenge D: Food Quality, nutrition and health, including policy and regulatory issues.

4.4.2 PhAction Annual Meeting CIRAD Montpellier, 11-14 June.

Highlights of PhAction Business meeting 2001

1. Progress was made in the development of PhAction's banner theme 'Linking Farmers to Markets'. This is an umbrella for the co-ordination of project activities in post-harvest development. It includes four theme areas into which existing projects can fit. This will show up research gaps and so provide targeted funding-opportunities for donor wishing to invest in the post-harvest sector.

2. A two-day meeting was held to consider 'Linking Farmers to Markets'. Forty-two participants from north and south, private and public sector organisations endorsed the initiative and contributed to the development of theme areas. A framework document describing the initiative and presenting concept notes for the theme areas will be published in due course.

3. It was resolved that the 'Linking Farmers to Markets' initiative should be presented at the next International Centers' Week in Washington. Possible linkages with GFAR (Global

Programmes), CGIAR (Global Challenge) and FAO (Global Initiative on Post-harvest Technology) will be explored in advance of the meeting.

4. The Institute of Crop and Food Research of New Zealand was welcomed a new member, so that PhAction now comprises 12 organisation. It was resolved that the membership should be increased, especially to include regional bodies and private sector organisations.

5. Dr Ellen Hanak retired as Chairperson and Dr Guy Poulter (NRI) was elected in her place. It was decided that PhAction will now be managed by an elected three-person Executive Committee comprising the Chair, the Deputy Chair (Shaun Ferris - IITA) and Francois Mazaud (FAO). This step was taken in anticipation of an enlarged membership.

6. The next PhAction meeting is planned for Japan in Oct/Nov 2002.

7. Output from the Montpellier Meeting, project outline for Linking Farmers to Markets.

4.4.2.1“Linking farmers to markets”

An overview of a the PhAction initiative

Goal of the initiative: To contribute to improved livelihoods, food security and sustainable development in developing countries through the execution of dynamic post-harvest interventions that equitably link smallholder farmers, rural processors and traders to growth markets

Purpose: To design and execute globally relevant and well-focused inter-institutional post-harvest research and development projects that will achieve effective and co-ordinated interventions to benefit the poor in developing countries.

Outputs: The initial output of this initiative will be concept notes for 4 well-defined theme areas, each one addressing a major challenge to providing more effective links between smallholder farmers and growth markets. Projects will be developed within each theme area. Priority theme areas and their interactions

The PhAction consultation process during 2001 has helped to define four major theme or challenge areas within the post-harvest field. These are four areas where collaborative research and development can help small farmers and small rural agroenterprises in developing countries realise positive outcomes from the changes now occurring in the agrifood sector. To benefit from these changes, rural people, enterprises and communities will need to:

Become more competitive in a market-oriented environment, able to make sound business decisions when identifying and developing market opportunities for agrifood based products (but not at the expense of environmental or social sustainability).

Link with agrifood supply chains that go beyond the local economy, under terms that are equitable as well as competitive, supported by affordable, sustainable and effective local business development services.

Become more innovative in accessing, developing and applying appropriate post-harvest technologies to produce the products demanded by the market.

Consistently meet regulatory standards and consumer demands for high quality, safe food products in their target markets (with corresponding implications at policy level).

These four areas are interrelated. Becoming more market oriented, and identifying realistic opportunities that are sustainable in commercial, social and environmental terms is a first step. Once opportunities are identified, specific supply chains (market linkages) can be developed, and the necessary services tapped. Within the supply chain, technology is a key factor determining efficiency and competitiveness, as well as environmental sustainability (e.g. recycling of wastes and by products). Technology is also related to food quality/safety standards, as is the integration of the different actors in the supply chain.

In each of these four areas, the choices made by small enterprises and rural communities can vitally affect local development. Selecting the wrong market, product or crop, making the wrong type of linkage with traders, food processors or exporters, investing in the inappropriate technology and producing poor quality products can all result in commercial failure, or in short term economic gains at the expense of longer term social and environmental sustainability. Making the right decisions is very important for these rural actors and their communities.

The PhAction “Linking Farmers to Markets” initiative is aimed at ensuring that rural people, enterprise and communities in the developing world have access to information, technologies, methods and tools to help them make the right choices in these complex situations. During the meetings held in Hanoi and Montpellier, in April and June 2001 respectively, each of the four theme areas was developed with this in mind. The outcome is a description of the major issues in each theme area around which collaborative R and D projects can be developed.

Specific projects developed within each theme areas will build on existing activities of the institutions and organisations involved, with added value derived from the global reach of PhAction, and the capacity to synthesise and analyse diverse experiences across regions, commodities markets and institutional/organisational settings. In these projects, PhAction members will work hand in hand with partners in developing countries, local and international NGOs, the private sector and advanced research institutes. One innovative feature of these partnerships will be the emphasis placed on bridging the gap that exists between agriculture and enterprise development, especially as regards methodologies for market identification and development, enterprise and supply chain organisation, and product quality/safety assurance schemes. Outputs from the projects that are developed within these theme areas will be both developmental (e.g. more successful and diverse rural enterprises and livelihoods, stronger support institutions) and research oriented (e.g. decision support tools and methods that are international public goods).

Theme area 1: Identifying and Developing Market Opportunities

Making more successful linkages between farmers and markets means making better decisions about what to produce, how to add value to it and where to sell it. Information from the market is critical to making these decisions, but often this information is not available, or it is poorly used. Additionally, farmers, and the institutions that support them often are more familiar with making choices based on agricultural production criteria alone, than on integrating this with market information. Since rural areas are increasingly exposed to free markets, thanks to policies of trade liberalisation and removal of parastatal marketing agencies, they need to be competitive to survive. The capacity to access and use market information is therefore vital. Many tools to assist

enterprises in this task are available, or under development, but have not been systematically evaluated. This theme area seeks to assist both private sector enterprises and their support institutions to make this shift from a production to a market orientation, and so facilitate the process of identifying and developing market opportunities.

Theme area 1 goal: to improve the quality of market and marketing related decisions made by rural agroenterprises and organisations that support them.

Objective 1: to develop and evaluate methods for spatial market opportunity analysis. Within a given area (watershed, political unit) opportunity identification requires the integration of market and agricultural production information. This is amenable to GIS-based applications. Some elements of a methodology utilising GIS are under development (CIAT, IFPRI) but need to be evaluated and refined for use each spatial level.

Objective 2: developing rapid decision making tools to analyse selected products based on market demand and supply chain efficiency.

Once the market opportunities have been identified (Objective 1) the market characteristics for each priority product need to be defined (market structure, conduct and performance, demand trends, segmentation and targeting, supply chain characteristics etc). A variety of methods and tools are available but many were developed for urban, non-agricultural enterprises, and will have to be adapted and evaluated for use in rural enterprise situations in developing countries.

Objective 3: developing rapid decision making tools for business evaluation and investment programmes

The next stage in agroenterprise development is to assess the feasibility of the new business areas identified. This takes into account not only market information, but also production, technical, financial and environmental considerations, to enable an enterprise to decide whether or not the investment will meet its objectives (which may well have social and environmental elements in addition to the purely financial). Tools that are appropriate to the capacity and scale of rural enterprises will be developed and evaluated.

Objective 4. Building capacity in market analysis and business feasibility evaluation.

Many of the public sector and civil society organisations that support rural development (including the research community) are still operating under a production or supply orientation. They recognise the need to become more market oriented, but lack the internal capacity to achieve this. Capacity building programmes that foster the institutional shift to a market oriented strategy are required. This objective will support the design and evaluation of such programmes.

Three dimensions were identified which provide a framework for development and evaluation of the decision-making methods and tools described above:

- Client type: private sector farmers/enterprises (individual or in associations), and their support institutions (research and development sector agencies in public and private sectors, and NGOs)
- Market type; local, national, regional, global or niche markets
- Spatial application zone: enterprise/farm, community, watershed, regional or global.
- IITA, CIAT, CIRAD, IFPRI and NRI are key PhAction members already involved in the development and evaluation of specific marketing methods and tools for agroenterprise

projects in Africa and Latin America. Regional networks in Africa such as FOODNET/ASARECA are key actors in this theme area, with funds to support projects within this theme area that are relevant to the needs of their clients.

Theme area 2:

Enhancing the competitiveness of rural agroenterprises through better integration of supply chains and delivery of effective business support services.

With the increasing concentration and vertical integration of the food industry, the development of long-term relationships within the production-consumption chain is seen as a source of considerable competitive advantage. Integration of small producers and rural enterprises into these “supply chains” is critical for long-term access to markets, especially growth and high value markets. But this integration needs to be equitable as well as competitive.

Successful enterprises require a range of services. While micro-finance and other financing schemes have solved many of the problems inherent in delivering financial services to the rural poor, non-financial services (termed Business Development Services or BDS) still suffer from a supply-driven ethos, with inappropriate and poor quality services. Privatisation of the public sector has reduced the supply of such services drastically in many countries, especially in remote rural areas. Implementation of more demand-driven mechanisms to improve the delivery of BDS in rural areas are critical. This will require a shift from the supply side mentality of many providers, but also a balanced partnership between private and public sectors together with other actors in wider civil society.

The two issues of BDS delivery and integration of supply chains are both organisational in nature. This theme area thus focuses on organisation in the agrifood context, with two objectives under a common purpose:

Theme area 2 goal: To integrate smallholder farmers and rural agro-enterprises, in an equitable and sustainable manner, into value-adding supply chains serving growth markets.

Objective 1: to identify and evaluate options for organisational structures and relationships between actors, that enhance local innovation and result in greater and more equitably distributed benefits through the supply chain for agrifood products in growth markets.

Emphasis is placed on:

- Rural enterprise clusters (groups of locally concentrated small enterprises in one sub-sector and market) where potential for collective action to develop such supply chains is most likely to exist.
- Equitable and efficient mechanisms for supply chain linkages between small- and large-scale agrifood enterprises.
- Mainstreaming organic and ethical (alternative) trade markets.

Objective 2: to identify and evaluate organisational options for sustainable improvement in content and delivery of business development services to small rural agroenterprises.

Emphasis is placed on:

- Identifying effective demand for services
- Mechanisms for developing markets for services in rural areas (including the informal sector)

- Definition of roles for private sector, NGO and community organisations and the public sector in service delivery and finance (and possible subsidy), depending on context.
- Schemes for organising services at local level in rural areas.

This theme area attempts to integrate approaches from the small enterprise development field with those of the rural agrifood development area. PhAction recognises that considerable experience is available in Advanced Research Organisations (e.g. on BDS delivery and supply chain organisation) in the small enterprise development field, although often in an urban context. Equally, the private sector and NGOs have experience in a number of specific cases that can supply lessons learned. The following process is proposed to combine these experiences with those of PhAction members and partners:

1. An initial learning process in which PhAction members, partners and clients, and relevant agencies from the small enterprise field, can develop a common analytical framework. The research products should also be defined at this stage, based on client needs.
2. The specific project components outlined above can then be developed in an integrated fashion in specific locations (case study sites) where PhAction members and their partners are working (or planning to work).
3. The research products will be tested and validated in other areas.
4. A cross-site component to the project will ensure the overall co-ordination of activities, the development of the common analytical framework, and undertaking the subsequent analysis of the experiences.

Within this framework, a specific project is now under discussion involving CIAT, CIRAD, NRI and GTZ together with Traidcraft and ITC. The project would build on their existing R and D activities in supply chain organisation and BDS delivery, which include:

- BDS support to export horticulture in several countries (NRI)
- Agroenterprise clusters and their supply chain linkages (CIRAD, CIAT)
- Local BDS support systems in Latin America (CIAT).
- Producer qualification and supply chain organisation in Sri Lanka and Cambodia (GTZ)
- Supply chain organisation for alternative trade markets in Malawi (Traidcraft)

Theme area 3:

Developing and disseminating post-harvest technology for rural industries.

To meet the challenges and opportunities of globalisation, farmers, processors and traders need appropriate techniques and technologies to expand their markets, enhance their competitiveness, add value and improve quality of their products. Success in these endeavours will help the long-term sustainability of often remote rural communities, and the livelihoods of rural people, as well as potentially producing positive benefits for the natural environment. However, this depends upon accessing technology that is appropriate for the commodity, production systems and agro-ecological conditions, and the local capacity for manufacture, operation and/or maintenance, as well meeting the needs of the end market. While many such technologies exist, these may not be accessible to rural enterprises in developing countries to lack of information, local manufacturing capability, infrastructure or operational expertise.

Theme 3 Goal: To improve food security and strengthen the competitiveness of small and medium enterprises by improving the development and uptake of innovative post-harvest technologies and techniques for smallholder rural producers.

Objective 1. To undertake information and technology needs assessments which will enable the better use of technologies for reducing post-harvest losses and improving the marketability of smallholder rural produce.

Objective 2. To develop, and foster adoption of, post-harvest technologies that enable smallholders to capitalise on market opportunities, improve competitiveness and adhere to food quality and safety standards through new and existing collaborative partnerships.

Objective 3. To improve adapt and improve use of information and decision support tools for introducing or improving post-harvest techniques and technologies, and train end-users in the application and improvement of these tools

Key elements in achieving these objectives are:

- Technology needs assessment of rural industries and post-harvest enterprises in selected key commodities/areas
- Inventory of innovative post-harvest processes, technologies, processing products and techniques and manufacturers as well as infrastructure requirements and constraints
- Private sector linkages for the development of products and technologies, aiming to strengthen technology uptake and market development.
- Participatory development, verification and adaptation of innovative technologies
- Development of training materials, facilitation of training and fostering of new networks for technology and information exchange (e.g. FAO-INPhO)
- Information system design and decision support tool development, including for the exchange of information between developing countries.

Training of trainers and end-users in the use of technology information systems

Priorities identified for project development within this theme area are:

- S and SE Asia: Vietnam, Bangladesh, Thailand, Nepal (IRRI, ACIAR.): Innovative technologies for drying and storage of rice, wheat and maize
- Sub-Saharan Africa: Benin, Ghana, Guinea Conakry, Uganda (CIRAD, IITA): Food processing technologies for yam, cassava, and maize
- Global: Colombia, Peru, Venezuela, Tanzania, Malawi, Nigeria, Kenya, Vietnam, and Thailand (CIAT, CIP, IITA) Production and processing of cassava, sweet potato, soybean and maize, for protein and energy for animal feeding.
- Tropical regions: (ACIAR, NRI, CIAT) Under-utilised commodities and by-products (fruit, vegetables and cereals) - income diversification and value adding; market access/quarantine treatment; better use of by producer reducing contaminants; documentation of traditional practices for storage and processing

Theme area 4:

Establishing realistic food quality and safety objectives for small rural agroenterprises: learning and projecting from experience.

Many developing countries have difficulty meeting the food quality and safety standards of export markets. These standards are becoming more stringent overtime, in response to consumer concerns (e.g. mycotoxin and pesticide levels in tropical produce). Within national urban

markets in developing countries themselves, consumer demand for safe and high quality food products is rising rapidly, and can result in loss of market share to imported food products.

In order to operationalise food quality and safety programmes in developing countries, it is necessary to understand the determinants of quality. This may be incomplete for many tropical products. National food quality standards may be set unrealistically high (using international codex standards), yet enforcement is sporadic. More appropriate and achievable quality objectives can be set and enforced. The quality challenge is particularly acute for small-scale enterprises. Food quality is a function of the whole supply chain, requiring co-ordination among actors handling the produce. Diagnosis at critical points where quality can be lost is vital, but can be expensive. Adherence to quality assurance programmes can, however, bring benefits at consumer level. This theme area is proposed to develop and evaluate the methodologies required for small and medium scale enterprises to overcome these quality and food safety challenges in both national and export markets. This requires action at the level of the regulatory organisations as well as the enterprises/supply chains themselves.

Theme area 4 goal: to contribute to the equitable and sustainable integration of small and medium scale rural agro-enterprises into value-adding supply chains serving growth markets.

Objective 1. To develop quality and safety assurance methodologies that can be applied in developing countries by small and medium-scale enterprises, and build capacity in the institutions that support them, so that their products meet appropriate regulatory standards and quality requirements for national and export markets.

Objective 2: To develop appropriate quality and safety objectives for local regulatory systems in developing countries through the application of risk analysis techniques, including assessment of human health risks and identification of feasible quality/safety targets for supply chain actors.

Six components that contribute to the above two objectives have been identified:

- Participatory research with supply chain actors to identify and quantify constraints and develop better understanding of how quality deteriorates (critical control points), and problems in compliance with regulations; followed by on site studies of quality formation using alternative techniques for production, handling, storage etc, and considering their economic costs and benefits.
- Develop and test rapid, low cost diagnostic techniques, appropriate for use by small-scale enterprises.
- Develop appropriate food quality and safety objectives, using principles of risk analysis, based on the problems encountered in 1 and a determination of the acceptable levels of quality for the consumer and an assessment of the capacity of local supply chain actors to meet safety and other quality objectives.
- Design, implement and test appropriate food quality assurance schemes, based on the safety and quality objectives identified in 3, and using the “good practices”, TQM and HACCP approaches as appropriate with small-scale enterprises in these supply chains. This will be monitored and evaluated, with analysis of costs and benefits.
- Develop and test outreach and training programmes for introducing quality assurance systems with enterprises and regulatory/standards organisations.
- Establish food quality and safety management networks at national and regional level, involving stakeholders, to review standards and objectives of quality programmes and determine new needs over time.

Key supply chains have been identified for this theme area to focus on, balancing different end-markets (national or export), types of quality/safety issues (mycotoxins, pesticide residues etc) and storage/shelf life characteristics: Agricultural commodities around which this theme area could develop are: groundnuts, maize, roots and tubers, dairy products, poultry, fresh fruits and vegetables, coffee and cocoa.

Implementation will be based on existing project activities of PhAction members, especially CIRAD and NRI, including West Africa (Senegal, Benin, Ghana) Asia (Vietnam, India) and Latin America (Brazil, Paraguay, Bolivia, Colombia)

4.4.3 Washington CGIAR AGM 30 Nov – 2 Dec, 2001.

By G.Poulter¹, S. Ferris², R. Best³, F. Mazoud⁴, F. Chapparo⁵ and S. Ketema⁶

1-NRI, 2-IITA, 3-CIAT, 4-FAO, 5-GFAR and 6-ASARECA

Presentation of “Linking Farmers to Markets”

The presentation for the PhAction Initiative was well attended with over sixty-five people present. The three speakers S. Ketema (Executive Secretary ASARECA, F. Chapparo Executive Secretary GFAR and Guy Poulter Chairman PhAction) were well received and the subject (Linking Farmers to Markets) was clearly of considerable interest both to the meeting itself and as a topic with in the wider research and development community present in Washington.

The purpose of the meeting was to present the Ph Action thinking on a global initiative linking farmers to markets and get feedback from the CGIAR and wider research community on this topic. In the discussion most speakers were supportive of the overall farmers to markets thrust of our project. However, we did our best to side-step what proved to be a sensitive question about what is global about this global initiative and we only later learned that this was a thorny issue being asked of all potential candidates for funding for a global programme. (For the time being we should continue to call our activity an 'initiative' to distinguish it from “challenge programmes” and/or “global partnership programmes”). Another speaker questioned how this initiative could impact on macro initiatives, such as negotiations in the WTO, globalisation debates etc. We tried to explain that we were more to do with assistance for small farmers in remote areas to improve their livelihoods but this then leads again to question the need for a global approach. Overall this presentation achieved its purpose of bringing the work of Ph Action to a wider audience but we must now take stock of how this initiative fits with the wider developments in the research community and develop a game plan for the next steps. This will include follow up with donors that showed interest in the programme and also to fine tune the strategy and thematic areas for further

4.4.4 Publication of the PhAction Newsletter 1500 circulated twice per year, and also available on the IITA website.

By R.S.B. Ferris and J. van der Graver

In 2001, two editions of the PhAction Newsletter were published in June and December. These publications coincided with the Centres mid term and immediately after the AGM meetings. The Newsletter is primarily the promotional instrument of the organizations that make up PhAction but there are also contributions from partners and a section on general news and interesting activities that are occurring within the postharvest sector. The newsletter is circulated to approximately 2000 people as a hard copy and is also available on the IITA, GTZ and FAO websites.

4.4.5 Global Initiative for Postharvest Technologies – FARA Strategy Meeting

By R.S.B Ferris and C. Wheatley (consultant)

The Agro-Industries and Post-Harvest Management Service of FAO (FAO/AGSI) in collaboration with GFAR (Global Forum for Agriculture) and PhAction (Global Postharvest Forum), has launched an international initiative geared toward facilitating development within the post-harvest sector of developing countries. This summary provides an overview of the Africa regional consultation on the proposed Global Initiative on Post-Harvest Technology (GIPhT), sponsored by FAO and GFAR. The consultation was held in Entebbe, Uganda on 15-17 September 2001. The initiative will be implemented in two-phases:

Phase 1- Developing a global perspective of the post-harvest sector, through the planning and implementation of five coordinated technical regional workshops. The current workshop in Africa is the first of these to take place, and will be followed by the other four regional workshops before the end of 2001. The other regional workshops are now taking place and will be completed by February of 2002.

Phase 2- Conducting a five-day International Technical Consultation on Post-Harvest, with the objective of launching a Global Initiative on Post-Harvest Technology (GIPhT).

Conclusions from the African Strategy meeting

Two over-arching strategies for developing the post-harvest sector were developed by the participants of the workshop. One is based on the existing post-harvest system and traditional commodities, and involves upgrading products and processes, improving value added and quality, so allowing the products to enter higher value urban and regional markets. This strategy also encompasses storage of traditional commodities (for on farm use, or to take advantage of higher prices in the off season). This is the strategy identified by West and Central Africa, and by Southern African countries and this impacts on both food security and poverty alleviation goals.

The other strategy is focused on the development of novel or non-traditional export commodities/products, aimed at both regional and global markets, and including products with large volumes and those with niche, but higher unit value markets. This strategy was identified by East Africa sub-region, and also by Southern African countries, which thus adopted a dual approach.

The key thematic areas within which actions for the GIPhT can be developed are relevant to both strategies. They are summarised in the table in the previous section of this report. If the GIPhT initiative is to address the needs and opportunities of Africa, it will have to encompass both the wide range of thematic areas, and the diverse set of stakeholders, that were identified in this workshop. It will need to engage and link together those actors directly involved in the production, marketing and consumption of produce and products, and those with a support role, i.e. in research, development and policy/regulatory functions.

Many of the theme areas are congruent with the priorities of the PhAction “linking farmers to markets” initiative, especially as regards market opportunity identification methods, commodity (or supply) chain organisation and development, food quality and safety and post-harvest technology development. It is important that the two initiatives should develop in tandem.

Concern was expressed by participants that the long lead time for this FAO/GFAR initiative could delay actions that are needed in the short term. It was recognised that several of the priorities identified in the different theme areas do not depend on large amounts of external funding, and that opportunities may exist for their initiation before the GIPhT initiative is finalised. It is also likely that complementary projects in the PhAction “Linking Farmers to Markets” initiative will be able to start up in 2002, and thus offer prospects for moving forward in some of the priority areas identified in this workshop.

Finally, there was a clear and strong signal from participants for the West/Central and Southern regions of Africa to develop post-harvest networks similar to the FOODNET network in East Africa, under the auspices of their respective sub-regional groupings (CORAF and SACCAR).

Sub-regional priorities

The sub-regional working groups considered the theme areas in the light of the strategies that were identified as a result of the SWOT exercise for each sub-region. They also made some recommendations as to the type of commodities that could be prioritised for each strategy. These are summarised in the table below:

	East	West-Central	Southern
Sub-regional strategy	Non-traditional crops for export markets	Upgrading traditional small-scale processing, for local and regional markets	Non-traditional crops for export markets and improved traditional post-harvest system for local markets.
Thematic area			
Policy	Range of policies relevant to non-traditional exports: e.g. trade, R and D investment, quality and safety regulations.		Trade policies, sanity/phytosanitary regulations, Financial and investment regulations
Information	Use of electronic media, mass media		Use of electronic media, mass media
Commodity chain development	Identification and development/ strengthening of chains involving small farmers for non-traditional export and high value niche markets	Information to assist accessing new markets (regional and global)	Market analysis and priority identification Case studies to learn from successes.
Post-harvest Technology		Improving technical capacity of processors (loss reduction, quality) Recycling and utilization of wastes and processing by-products (business and environmental benefit).	Storage Processing Preservation
Food quality/ safety		Harmonising standards Establishing standards in some markets (e.g. fish, processed foods)	Facilities Harmonization of standards
Capacity building-training	Business skills, Project cycle (including M & E), Methods for priority identification.	Enterprise development Market analysis Food safety	Product quality control and safety Agribusiness Food processing and storage
Networks		Sub-regional post-harvest	Sub-regional post-harvest network

		network establishment	establishment
Commodity priorities	Non-traditional exports: horticulture, floriculture, cashew nuts, Niche markets: medicinal plants, essential oils, spices, shea nuts, aloe	Traditional staples: cassava, maize, sweetpotato, finger millet (sahel) High value: yams, rice, plantain, potatoes Niche: fruits and vegetables Fish (Tilapia): for export markets	Traditional: maize, sorghum, millet, rice, cassava, sweet potatoes Pulses: soya, pigeon pea, cowpea, sesame Chile, paprika Fruit and vegetables (indigenous, exotic) Non timber forest products Meat and fish for export markets

Some priorities that all sub-regions have in common are:

Food quality/safety regulations and standards

Training in enterprise development/business skills

Methods for market analysis and opportunity identification

Sub-regional post-harvest networks (already operational in East Africa)

5.0 Training

5.1 Group training in Agro-enterprise development 1-12 May 2001

The Foodnet / CIAT / SARRNET agro-enterprise course was held in Entebbe, Uganda from 2 to 11 May 2001, with 27 participants from East and Southern African countries.

The course was made up of 5 modules:

Module 1: Setting the scene: Agro-enterprises and development. This module included sessions on a) Presentation of participants and review of expectations, b) Course objectives and content, c) Agro-enterprises within the newly liberalised economies, and d) The enterprise spirit.

Module 2: Managing and organising agro-enterprises. This module was made up of seven sub-modules. 2.1 Markets and marketing, 2.2 Business and market plans, 2.3 Strategies for enterprise development, 2.4 Technology: approaches and tools (including Internet), 2.5 Business development services, 2.6 Product development, 2.7 Profitability analysis.

Module 3: Exchanging information and learning from our experiences. In this module, whose objective was to share experiences among the participants, each participant made a 15 minute presentation on his or her work related to agro-enterprise development, highlighting successes, limitations and lessons learnt.

Module 4: Improving market chain efficiency. In this module, a presentation was made on Integrated Agro-enterprise Projects, which provided elements for the analysis, through a field visit, of specific agro-enterprise chains (cassava, maize, coffee, spices and dried fruit). These cases were presented by the participants in plenary.

Module 5: Action planning and course evaluation. In the concluding module, participants prepared brief action plans on the proposed use of the knowledge gained during the course. In addition the course was evaluated (a) based on the uptake of concepts on the part of the participants, and (b) on the level of fulfilment of the participants expectations.

Evaluation

Course participants provided feedback on the relevance of the course and the level to which the content had met their expectations, information that will be used to develop future courses. The very homogeneous nature of the activities of and institutions from which participants were drawn meant that not all expectations were fully met. If the interaction of researchers and development personnel is one of the principal objectives of this type of course, its design and content will need to be adjusted accordingly, making sure that the prospective participants are fully aware of the scope of the course that is being offered.

Future activities

In general the agro-enterprise course was very well received by the participants and there has been much interest generated from this work. Based on the findings of this course, it was decided to proceed, based on two requests for similar training from NARO, Uganda and from mainstream NGOs such as Catholic Relief Services and CARE.

The main consideration from our perspective is to change course format from a two week basic training to a more long term learning process, in which training models are shorter, ie in 1 week sessions, but that each session tackles a part of the agro-enterprise training and then the

participants take this information and apply this in the field. This approach to learning will take on the question of both sustainability and also knowledge capturing which is a perennial problem, particularly with Government staff who are not well paid compared with other private sector or NGO agencies. Typically, well trained personnel will leave the department in which the training was given or training is provided to people who are unable to capitalize on the skills taught.

This learning process, is therefore a more robust partnership with the client organization and there will be a cost element to this process such that both sides are making not only a skills transfer commitment but also that there is a financial tie.

The first of these new sessions is planned for January 2002, with NARO-Uganda and from this first session on market analysis, the participants will test the ideas and in the subsequent sessions, participants will come armed with relevant experiences which will be used as part of the forward planning in the process of developing agro-enterprises. This approach is therefore a much more dynamic process and will work with participants who are designated to perform market linkage tasks.

Table 2. Evaluation by the participants of the Agroenterprise Development Course. Entebbe 2-11 May 2001. Scale: 0 – 10.

Module	Av, Score
Module 1.Setting the scene	7.50
Module 2. Managing and organising agroenterprises	
Module 2.1 Markets and marketing	7.48
Module 2.2 Business and market plans	7.88
Module 2.3 Model approaches and strategies	8.00
Module 2.4 Technology: approaches and tools	7.88
Module 2.5 Business development services	8.33
Module 2.6 Product development	8.15
Module 2.7 Profitability analysis	8.48
Module 3 Exchanging information and learning from our experiences	n.a
Module 4 Improving market chain efficiency	8.30
Technical organisation and educational methods	7.00
Logistics and administration	7.67

n.a not available

Table 2. shows the participants' evaluation of the course on a scale of 0 (negative evaluation) to 10 (positive evaluation). All technical modules were evaluated well, in the range 7.50 to 8.48. The 'technical organisation and educational methods', which includes aspects such as the division of time between theoretical and practical sessions, field work, sequence of topics etc. and the educational approaches and techniques used, was evaluated at 7.00, and this aspect could probably be improved in future courses.

5.2 Group training in website development 15-26 Sept 2001

By J. Atalobhor, J. Nyagahima, A. Muganga, S. Ferris

This course was developed in collaboration with IITA-Foodnet and Africa-link to assist the national programmes in the ASARECA region to have a better understanding of using the internet and to enable each national programme to set up the framework for their own website.

The course set out to provide the participants with a clear understanding of how to maintain and update a website. The sites will be the diary, directory, strategy point and monitoring and evaluation information source for the national programmes.

Mr. Dieudonne Harahagazwe Institut des Sciences Agronomiques du Burundi (ISABU) Email: dhahagazwe@yahoo.fr	Mr. Girum Endalew Head of Documentation, EARO Email: jar@telecom.net.et
Mr. Jerome Nzohabonayo Burundi Email: isabu@cni.cbinfo.com , nzohajerme@yahoo.com	Mrs. Vivienne Oguya Ag. Head Library and Information Services Kenya Agricultural Research Institute (KARI) Email: vivienneo@kari.org
Mr. Jerome Nzohabonayo Burundi Email: isabu@cni.cbinfo.com , nzohajerme@yahoo.com	Mr. Martin Kinyua Computer Programmer/ Network Administrator KARI Email: TMartinK@kari.org
Mr. Jerome Nzohabonayo Email: isabu@cni.cbinfo.com , nzohajerme@yahoo.com	Mrs. Ratompoalimanana Niavo Holisoa Responsible for Informatics Unit Développement Rural (FOFIFA) Email: fofifa@dts.mg
Mr. Jerome Nzohabonayo Email: isabu@cni.cbinfo.com , nzohajerme@yahoo.com	Mr. Yves Ngendo Communicator ISAR, Rwanda Institut des Sciences Agronomiques du Rwanda Email: dsisar@rwanda1.com
Mr. Bonaventure Sabimbona Documentalist (IRAZ) Email: iraz@cbinfo.com	Mr. Bonaventure Sabimbona Documentalist Institut, Burundi Tel: Email: iraz@cbinfo.com
Ms. Eden Makele Food Technologist P.O. Box 1162, CVL, Asmara, Eritrea Email: research@tse.com.er , semere@eol.com.er	Mr. Ahmed Bediru Asst. Systems Administrator Ethiopia Ethiopian Agricultural Research Organisation (EARO) Email: jar@telecom.net.et
Mr. Seyoum Teame Planning and Statistics Eritrea Tel: 291-1-121005 Email: seyoumteame@yahoo.com , research@tse.com.er , semere@eol.com.er	

6. PUBLICATIONS

a. Journals:

b. Conferences, workshops, institute publications:

PhAction.

Ferris R. S. B. and Van S. Graver J. (2001) Phaction News IV. The newsletter of the Global Postharvest Forum. Fourth Issue

Ferris R. S. B. and Van S. Graver J. (2001) Phaction News V. The newsletter of the Global Postharvest Forum. Fifth Issue.

PhAction strategy and implementation plans. (2001) R.S.B. Ferris, R. Best, R. Bakker, G. Poulter, G. Johnson.

Rwanda Project

Ferris, R.S.B and V. Aggraval, (2001). Rwandan Agricultural Technology Development and Transfer Project, Fifth Quarterly USAID report. Reporting period, Oct –Dec 2000.

Ferris, R.S.B and V. Aggraval, (2001). Rwandan Agricultural Technology Development and Transfer Project, Sixth Quarterly USAID report. Reporting period, Jan –March 2001.

Ferris, R.S.B and V. Aggraval, (2001). Rwandan Agricultural Technology Development and Transfer Project, Seventh Quarterly USAID report. Reporting period, April - May 2001.

Ferris, R.S.B and V. Aggraval, (2001). Rwandan Agricultural Technology Development and Transfer Project, Eighth Quarterly USAID report. Reporting period, June Nov 2001.

Ferris, R.S.B and V. Aggraval, (2001). Strategic plan for ISAR.

MIS Project

Ferris, R.S.B and Robbins P. (2001). Stakeholders Meetings for Strengthening the Market Information Service in Uganda. pp75.

A.K. Muganga, G. Okoboi, M. Nahamya, R.S.B Ferris, (2000) Fourth Marketing Information Services report. USAID, Quarterly reports, Kampala. Reporting period July –September 2000.

ACDI Project

Ferris, R.S.B, Legg, J, Bua, A., Agona, A., and Whyte J. (2001). Dissemination and Utilisation of Mosaic resistant cassava in Uganda, Ninth Quarterly USAID report. Reporting period, October – December 2000.

Ferris, R.S.B, Legg, J, Bua, A., Agona, A., and Whyte J. (2001). Dissemination and Utilisation of Mosaic resistant cassava in Uganda, Tenth Quarterly USAID report. Reporting period, October – December 2000.

Ferris, R.S.B, Legg, J, Bua, A., Agona, A., and Whyte J. (2001). Dissemination and Utilisation of Mosaic resistant cassava in Uganda, Eleventh Quarterly USAID report. Reporting period, October – December 2000.

FOODNET

Market study to determine the options within the ware and seed potato markets in Rwanda (inprep) G. Okoboi, F. Goossens, A. Cooke, S. Nzito, and R.S.B. Ferris

Evaluating the Marketing Opportunities for Shea nut products in Uganda (2001). R.S.B Ferris, C. Collinson, K. Wanda, J. Jagwe and P. Wright. Pp75

Evaluating Commercial Channels for Delivery of Public goods Information. (2001). R.S.B. Ferris G. Bell, and G. Okoboi

Global Initiative for Postharvest Technologies – FARA Strategy Meeting (2001) R.S.B Ferris and C. Wheatley.pp 27

7. FOODNET projects within the grants fund

7.1 Competitive Project Small Grants round 1

Project Title	Project Leader	Country	TOPIC
Project 1 Commercialisation of Agricultural Market Information & Commodity Exchange services in Tanzania Progress	Dr Emmnauel Mbiha Dept. of Agric. Econ. Sokoine University mbiha@suanet.ac.tz	Tanzania	Evaluate needs for improving market information services in Tanzania. Implement supplementary MIS activities in association with MDB Report
Project 2 Investigation of the viability of a Farmer based network for on line market information centres in Kiambu district, Kenya Progress	Dr C G Gitao Immediate Communications Ltd. Nairobi compton@swiftkenya.com	Kenya	Develop localised market information service for small scale farmers in Kiambu district. Report
Project 3 Market Study to establish demand for value added cassava products in Kenya for starch, flour & snack food. Progress	Prof Edward Karuri Department of Food Tech.Univ. of Nairobi Tel:0052630172 anp@arcc.or.ke	Kenya	Conduct demand study to estimate market potential for cassava based products in the commercial Kenya manufacturing sector. Support to EARRNET. Report
Project 4 Cassava processing and Marketing of products in Umutara and Bugesera regions of Rwanda for improved income and Food Security Progress	E. Asante World Vision IITA Rwanda iita@rwandatell.rwandal.com	Rwanda	Develop a cassava based enterprise development project with farmer associations to add value to cassava and access higher value markets. Report
Project 5 Establishment & Commercialisation of a small scale integrated Cassava Processing enterprise in Lira district, Uganda Progress	Dr Ambrose Agona Kawanda Station NARO karihave@starcom.co.ug	Uganda	Conduct a rapid market survey for linking rural based cassava processors with urban markets. Linkage of project with Shea processing if equipment can be multi-functional Report
Project 6 Introducing and demonstration of Cassava processing equipment into the Eastern Zone of Tanzania. Progress	Kiddo J Mtunda TARO Sugarcane Research Inst. sarnet@cats-net.com	Tanzania	To introduce & promote improved Cassava processing at household level for increased consumption and income thru sales of value added Cassava products. Report

Project 7 Popularisation of the manual chipper/slicer machine for processing Cassava roots in Tanzania. Progress	Dr Silas Kajuna TARO kajuna@suanet.ac.tz siccokolijn@hotmail.com	Tanzania	Adding value to the Cassava root thru Chipping/Slicing and facilitating the drying, milling and packaging processes. No Report
Project 8 Market study to determine the options within the ware and seed of Irish potatoes markets in Rwanda and the region. Progress	S. Ntizo (ISAR) Vas Aggraval IITA In-Country Coordinator iita@rwandatell.rwandal.com	Rwanda	Conduct a subsector analysis of Irish Potato in Rwanda with the aim to determine local, national and regional market opportunities. Report
Project 9 A market survey for potatoes in Njabini, Kenya Progress	Nancy Nganga National Potato Research center, Limuru KARO nprckari@arcc.or.ke	Kenya	Market survey of the potato marketing sector in peri urban Nairobi. Report
Project 10 Feasibility study on the commercial establishment and operation of Irish potato storage facilities in Kenya. Progress	Prof S K Mbugua Dept. of Food Tech University of Nairobi smfoodke@swiftkenya.com	Kenya	Market reaserch and feasibility study on establishment of large scale commercial storage facilities for potatoes. No Report
Project 11 Assessment of Potato production, marketing and utilisation systems in the central highlands of Ethiopia. Progress	Dr. Chilot Yirga Holetta Agric. Research Centre EARO harc@telecom.net.et berga@imul.com	Ethiopia	Market survey to evaluate options for increasing potato sales into major urban centres Report
Project 12 Sweet potato market survey in North Omo Zone, Southern Ethiopia Progress	Getahun Degu arc@telecom.net.et berga@imul.com	Ethiopia	To evaluate the prevailing marketing efficiency and identifying market opportunities for sweet potatoes No Report
Project 13 Value adding of Banana in Burundi through preservation of Juice and Wine making. Progress	Dr Ir Ndungo Vigheri Institute superieur D'Agriculture Tel: 00257403000 Fax: 00257402605	Burundi Project may shift to DR Congo due to insecurity	Valorisation of Banana products by transformation and preservation of juice and banana Terminated and changed to other project
Project 14 Development of convenience foods from traditionally fermented Sorghum Flour Progress	Prof Ali Mubarak Food research center, Khartoum North frc@sudanmail.net S.Silim@cgiar.org	Sudan	Production of a better traditional fermented sorghum flour which can be used for the preparation of thick porridge Report

Project 15 Pigeon Pea processing and utilisation Progress	Food Research Center Khartoum North frc@sudanmail.net R.Jones@cgiar.org	Sudan	To promote improved processing technologies and increase utilisation of Pigeon Peas Report
Project 16 Improvement of marketable traditional dairy products Progress	Tagelsir Khidir Ahmed. Food Research Center Khartoum North frc@sudanmail.net	Sudan	Development, improvement and marketing of traditional Dairy Products. No Report
Project 17 Strategies for the Improvement of Poultry feed industry in Tanzania Progress	Dr G H Laswai Department of Animal Sci & Prodn. Sokoine University dasp@suanet.ac.tz laswaig@suanet.ac.tz	Tanzania	Analysis of value adding processes and quality control mechanisms in the production of poultry feeds. Report
Project 18 Needs assessment for Small Scale production of fruit pulp as an intermediate raw material in processing Progress	Prof Jasper Imungi Dean Faculty of Agric University of Nairobi, Kabete v.hagenimana@cgiar.org	Kenya	Assessmnet of the need and potential of small-medium scale processing of fruits into intermediate products & to determine which fruit are in great demand for processing. No Report
Project 19 Establishment of small scale fruit and vegetable processing plant in Machakos District of Kenya Progress	Fredrick M Kiilu Kamumo Products, Machakos ddsmks@Africaonline.co.ke	Kenya	Adding Value to agric. products locally produced & to increase raw material purchase of fruits and vegetables in Ukambani region. No Report
Project 20 Conduct a Market study for Bread Fruit in Madagascar Progress	Rakotoniaina Victor FOFIFA DRD BP 1690 Antananarivo fofifa-tsz@dts.mg	Madagascar	Explore the potential of both production and marketing of Bread fruit in Madagascar No Report

7.2 FOODNET commissioned studies Year 1

Project 1c Cassava Marketing in Uganda: Constraints and Opportunities for Growth and Development (Part 1 Market Channel Analysis)	C. Collinson*, K. Wanda, A. Muganga, and R.S.B. Ferris	Uganda	Explore the supply chain efficiency for cassava and cassava based products in Uganda. Developing the case study for other follow on studies. Done
Project 2c Uganda Industrial Survey Part II of Ugandan Cassava marketing Survey (demand side)	A. Graffham*, U. Kleih*, J. Jagwe#, K. Wanda#, P. Kalunda+ J. Nabawanuka+, G. Ntibarikure# and R.S.B. Ferris#	Uganda	Explore the potential demand for cassava and cassava based products in Uganda Developing the case study for other follow on studies. Done
Project 3c Tanzanian Cassava market Demand Study	S. Kolijn, J. Jagwe#, K. Wanda#, and R.S.B. Ferris#	Tanzania	Explore the potential demand for cassava and cassava based products in food and animal feed in Tanzania, Dar es Salaam focus Report
Project 4c Madagascan cassava market Demand Study	M.H. Dabat and R.S.B. Ferris#	Madagascar	Explore the potential demand for cassava and cassava based products in Madagascar Report
Project 5c Macro marketing information service Uganda	A. Muganga, M. Namanya, P. Robbins and R.S.B. Ferris#	Uganda	Developing a national market information service Report
Project 6c Micro market information service in Uganda	G. Okoboi, A. Muganga, P. Robbins and R.S.B. Ferris#	Uganda	Developing localised marketing information services in selected areas of Uganda Report

7.3 Commissioned Projects Year 2

Project 7 Shea Project	J.Jagwe, K.Wanda. Muganga, C. Collinson and R.S.B. Ferris#		
Project 8 Rock Radio	G. Okoboi, A. Muganga, P. Robbins and R.S.B. Ferris#		
Project 9 FARA	G. Okoboi, A. Muganga, P. Robbins and R.S.B. Ferris#		
Project 10 PhAction	#		
Marketing information linkage with KACE	A. Mukhebi, K. Muganga	Private Sector	FOODNET
FEWSNET regional meeting for developing regional MIS project linkages	N. Maunder, K. Muganga	USAID project	FOODNET
Community based radio as a means for developing sustainable dissemination of Market information	G. Bell, P. Etiang and P. Plovyt.	Private Sector	FOODNET
Spatial analysis of MIS information to measure efficiency of transaction costs over time	K. Muganga and Stan Woods	FOODNET, IFPRI	IFPRI, CTA
ASNAPP – information follows	K. Shawe	ASNAPP private sector and NARS	FOODNET
Regional market analysis of Poultry sector	NARS / CLAYUCA, FOODNET, CIAT	NARS, CLAYUCA	FOODNET
Regional starch market survey in lake zone	J. Casey	Starch pty,with NARS support	FOODNET
Engaging ASARECA into the Globalisation debate	P. Robbins, I. Minde, Zwisa, S. Ferris	CMIS, COMESA, FOODNET, IGAD, ECAPAPA	FOODNET
PhAction Developing a global Postharvest research agenda	PhAction	S. Ferris and FOODNET SC	FOODNET

ENRECA Agro-enterprise study tour to Asia	N. Holst, A. Agona, S.Ferris S. Ferris, S. Kolijn	DIAS, NARO, Private sector, NARS / PS engineering	DANIDA FOODNET
Translation of feed book	B. Ospina,		FOODNET
Developing a public-private sector consortium	G. Laswai, S. Kolijn, CLAYUCA	SUA, TFMA (PS)	FOODNET
Training			
Website design	Oct-01		FOODNET Africalink, Anets
Agro-enterprise development	Feb-02	SUA, FOODNET, CIAT, Technoserve	FOODNET
Vegetable training	AVRDC	Sudan and Uganda	FOODNET

By E.R. Mbiha¹, G.C. Ashimogo¹, A.A. Temu¹, D.Nyange¹, A. Muganga², S. Kolijn³